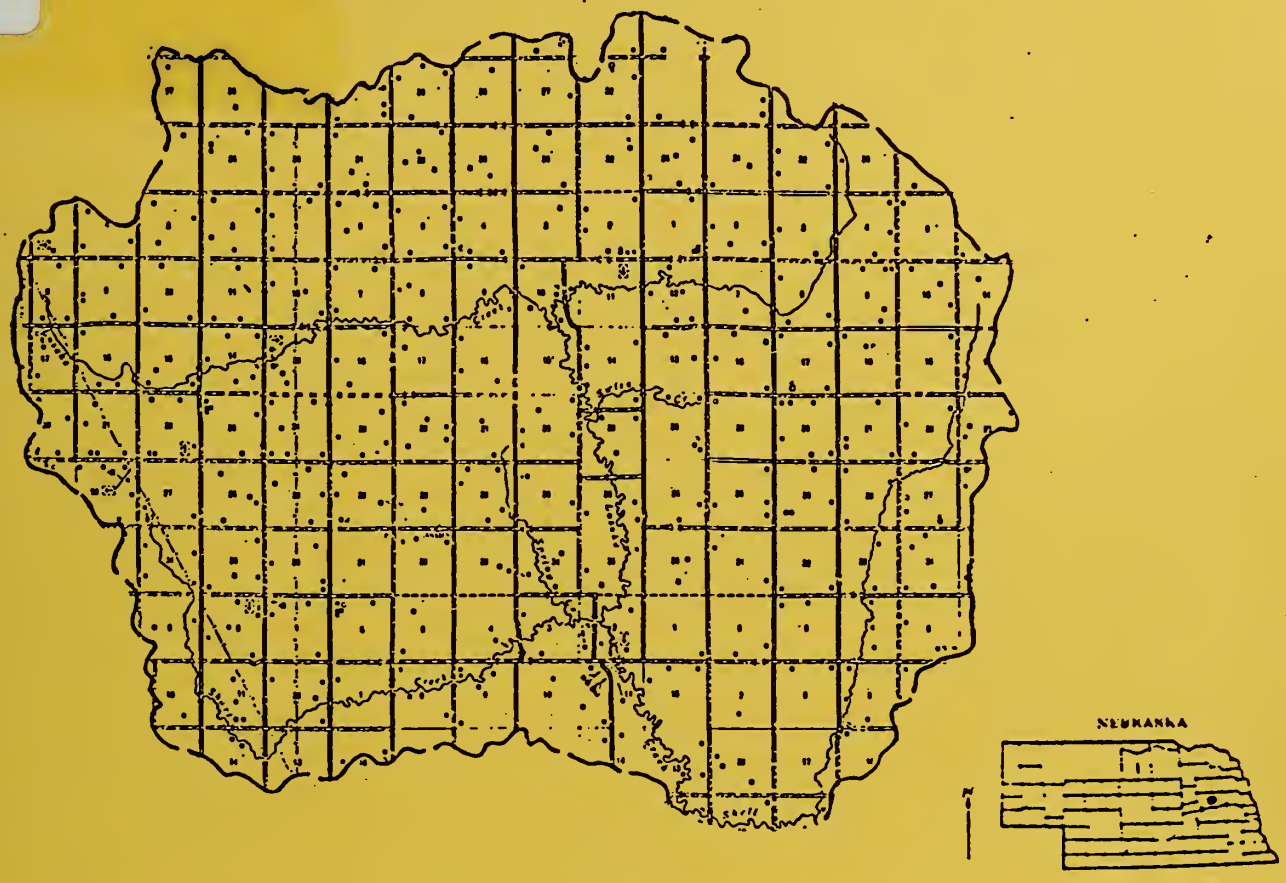
OSEKE-TAYLOR WATERSHED



FLOODPLAIN MANAGEMENT STUDY

Colfax and Platte Counties, Nebraska

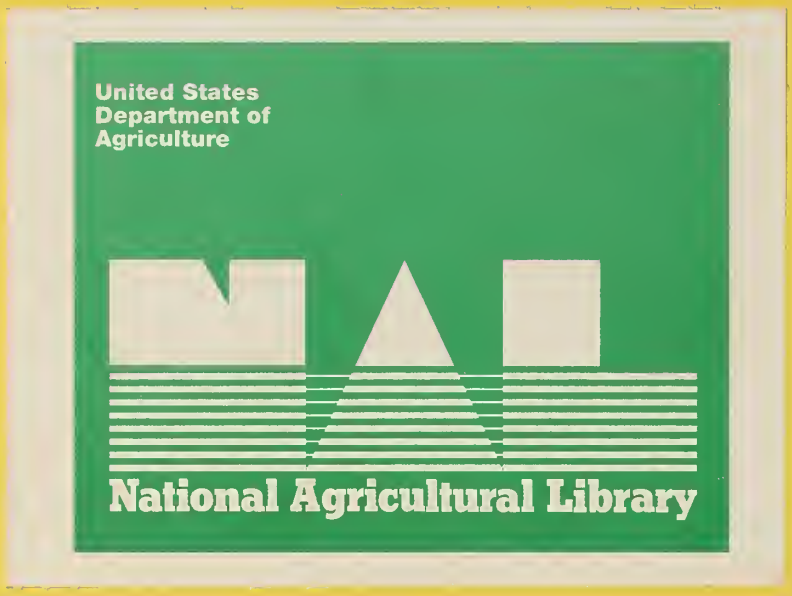
prepared by:
United States
Department of
Agriculture

Soil
Conservation
Service
Lincoln, Nebraska

Nebraska Natural
Resources Commission
Lincoln, Nebraska

for:
Lower Platte North
Natural Resources District
Wahoo, Nebraska

OCTOBER 1993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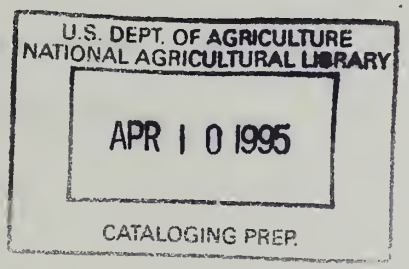

LOSEKE-TAYLOR

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INTRODUCTION

The floodplains of rivers and streams have been formed by nature to provide for the conveyance of flood flows resulting from large amounts of snowmelt or rainfall. Floods are acts of nature which cannot be wholly prevented by man. Floodplains are as important to the stream system as the actual stream channel.

The long-term solution to reducing flood damage and loss of life is to keep the floodplain free of development which could be damaged or which could obstruct the conveyance of flood waters. Some basic public actions which can be used to keep floodplain areas free of development are:

1. Provide public information to make lending institutions and prospective property buyers aware of the flood hazards.

2. Initiate floodplain regulations to prevent the development of the floodplain in a manner which would be hazardous during floods.

3. Acquisition of flood prone areas for use as parks, open space, wildlife habitat, and other public uses.

Potential users of the floodplain should base their land use decisions upon the advantages and disadvantages of such a location. Knowledge of flood hazards is many times not understood; consequently the managers, potential users, and occupants cannot always accurately assess the risks. In order for floodplain management to effectively play its role in the planning, development, and use of floodplains, it is necessary to:

1. Develop appropriate technical information and interpretations for use in floodplain management by state and local units of government.

2. Provide technical services to managers of floodplain property for community, industrial, and agricultural uses.

3. Improve basic technical knowledge about flood hazards.

A joint coordination agreement was executed between the Nebraska Natural Resources Commission (NNRC) and the U.S. Department of Agriculture, Soil Conservation Service (SCS) on November 20, 1981 to furnish technical assistance in carrying out floodplain management studies (FPMS). Authority for carrying out this study is provided by Section 6 of Public Law 83-566, Watershed Protection and Flood Prevention Act (Reference 1). This authorizes the SCS to cooperate with other federal, state, and local agencies to make investigations of the watersheds of rivers and other waterways as a basis for coordinated programs. In carrying out this study, the SCS is directed by Executive Order No. 11988, dated May 24, 1977 (Reference 2), which instructs federal agencies to provide leadership to avoid the risk of flood loss, minimize impacts of floods on people, and to restore and preserve the natural and beneficial values served by floodplains.

To reduce the degree of flooding and associated loss of lives and property, the NNRC is responsible for a non-structural program of floodplain management incuding the delineation of 100-year floodplains and floodways. The Commission has adopted minimum standards for local floodplain programs and assists cities and counties in the implementation and enforcement of those programs. This responsibility is designated through the 1983 Legislative Bill 35 Floodplain Management Act (Reference 3).

The Commission provides technical assistance to local governments and is the State Coordinating Agency for the National Flood Insurance Program.

This study is conducted in accordance with the April 1988 Plan of Work, April 1990 Supplement to the Plan of Work, and April 1992 Supplement 2 to the Plan of Work, developed and endorsed by the SCS, NNRC, and Lower Platte North Natural Resource District (NRD). The technical information in this FPMS was prepared by the SCS. This study shows high water profiles and areas subject to flooding based on analyses of existing stream hydraulics and current watershed and floodplain land use and cover.

Special appreciation is extended to the individuals who contributed information for the study. Appreciation is also extended to the landowners who permitted access to their property for surveys, photographs, and reconnaissance.

STUDY AREA

The Loseke-Taylor Watershed contains approximately 91,000 acres (142 sq. mi.). The watershed is located in Colfax and Platte Counties. The SCS hydrologic unit number for the watershed is 10200201060.

STREAMS

The watershed study includes Taylor Creek, an unnamed tributary of Shell Creek, Loseke Creek, Schaad Creek, Spring Creek and an unnamed tributary northeast of Loseke Creek. The study of the Loseke Creek begins in the NW 1/4 SW 1/4, Section 14, Township 19 North, Range 1 West, Platte County three miles east of Highway 81, and six miles north-northeast of Platte Center. Loseke Creek meanders east and south to its union with Shell Creek. This union is in the NW 1/4 NE 1/4, Section 24, Township 18 North, Range 1 East, 0.5 miles west of the Platte-Colfax County line. Loseke Creek is the longest tributary of the Shell Creek drainage area.

An unnamed tributary northeast of Loseke Creek was studied beginning in the NE 1/4 SE 1/4, Section 7, Township 19 North, Range 2 East, five miles south of Leigh, Nebraska. The tributary then meanders west to its confluence with Loseke Creek in the SW 1/4 SE 1/4, Section 10, Township 19

North, Range 1 East. A named tributary to Loseke Creek, Schaad Creek, was also studied commencing in the SW 1/4 NW 1/4, Section 13, Township 18 North, Range 1 West, five miles east of Platte Center. Schaad Creek then meanders southeast to its junction with Loseke Creek in the SE 1/4 NW 1/4, Section 2, Township 18 North, Range 1 East, 1.5 miles west of the Platte-Colfax County line. A named tributary to Schaad Creek, Spring Creek was also studied commencing in the NE 1/4 NW 1/4, Section 34, Township 19 North, Range 1 East, nine miles east and three miles north of Platte Center, Nebraska. Spring Creek flows south-southeasterly to its confluence with Schaad Creek in the SE 1/4 NE 1/4, Section 3, Township 18 North, Range 1 East.

Taylor Creek was studied starting in the NE 1/4 NE 1/4, Section 28, Township 19 North, Range 2 East, eight miles southeast of Leigh, Nebraska. Taylor Creek then meanders south to its union with Shell Creek. This union is in the SW 1/4 NE 1/4, Section 20, Township 18 North, Range 2 East, two miles east of the Platte-Colfax County line.

The final stream studied was an unnamed tributary to Shell Creek beginning in the NE 1/4 NE 1/4, Section 7, Township 18 North, Range 2 East, ten miles south of Leigh, Nebraska. The stream flows southerly to its confluence with Shell Creek in the SW 1/4 NE 1/4, Section 20, Township 18

North, Range 2 East. The streams with their lengths and drainage areas are shown on Table 1.

TABLE 1

DETAILED STUDY AREA

Stream	Length in Miles	Drainage Area in Square Miles
Taylor Creek	7.0	16.3
Loseke Creek	26.7	68.6
Schaad Creek	11.0	22.5
Spring Creek	2.5	4.6
Unnamed Trib. northeast of Loseke Creek	7.0	25.9
Shell Creek Unnamed Tributary	3.2	4.1
TOTAL	57.4	142.0

SOILS AND TOPOGRAPHY (References 4 & 5)

The majority of the watershed is an upland landscape. This landscape consists of ridgetops, side slopes, and narrow valleys. The ridgetops are rounded and commonly are gently sloping. The side slopes range from gently sloping to steep.

The uplands and foot slopes of this watershed consist of the Nora-Crofton-Moody association and the Geary-Alcester-Nora association. The Nora-Crofton-Moody

association is a deep, very gently sloping to steep, well drained and somewhat excessively drained, silty soils formed in loess on uplands. The Geary-Alcester-Nora association is deep, gently sloping to steep, well drained, silty soils; formed in silty colluvial-alluvial material and in loess.

Uplands and upland depressions consist of the Belfore-Moody association which are deep, nearly level to gently sloping, well drained, silty soils formed in loess on uplands.

The bottomlands and stream terraces consist of the Shell-Hobbs-Muir association which are deep, nearly level, well drained, silty soils formed in silty alluvium.

The Alcester series consists of deep, well drained, moderately permeable soils on foot slopes. These soils formed silty colluvial-alluvial material. Slopes range from 2 to 6 percent.

The Belfore series consists of deep, well drained, moderately slowly permeable soils on uplands. These soils formed in loess on broad ridgetops in the uplands. Slopes are 0 to 1 percent.

The Crofton series consists of deep, well drained and somewhat excessively drained, moderately permeable soils on

uplands. These soils formed in loess. Slopes range from 2 to 30 percent.

The Geary series consists of deep, well drained, moderately slowly permeable soils on uplands. These soils formed in brown loess of the Loveland Formation. Slopes range from 6 to 30 percent.

The Hobbs series consist of deep, well drained, moderately permeable soils on bottomlands of narrow drainageways in the uplands. These soils formed in noncalcareous, stratified, silty alluvium. Slopes range from 0 to 2 percent.

The Moody series consists of deep, well drained, moderately slowly permeable soils on uplands and high terraces. These soils formed in loess. Slopes range from 0 to 11 percent.

The Muir series consists of deep, well drained, moderately permeable soils on stream terraces. These soils generally formed in silty alluvium, but the lower part of Muir silt loam, sandy substratum, 0 to 1 percent slopes, formed in sandy alluvium. Slopes are 0 to 1 percent.

The Nora series consists of deep, well drained, moderately permeable soils on uplands. They formed in loess. Slopes range from 2 to 15 percent.

The Shell series consists of deep, well drained and moderately well drained soils on floodplains. These soils formed in stratified, silty alluvium. They generally are moderately permeable, but the clayey substratum phase is slowly permeable in the lower part. Slopes range from 0 to 2 percent.

CLIMATE

Winters are cold because of fairly frequent incursions of cold, continental air. Summers are hot but are marked by occasional interruptions of cooler air from the north. Snowfall is fairly frequent in winter, but the snow cover is usually not continuous. Rainfall is heaviest in late spring and early summer.

In winter the average temperature is 24 degrees F. and the average daily minimum temperature is 14 degrees. In summer the average temperature is 75 degrees, and the average daily maximum temperature is 86 degrees.

The average annual precipitation is 26 inches. Of this, 75 percent usually falls in April through September,

which includes the growing season for most crops. In two years out of ten, the rainfall in April through September is less than 15 inches. Thunderstorms occur on about 48 days each year, and most occur in summer.

Average seasonal snowfall is 25 inches. The greatest snow depth at any one time during the period of record was 21 inches. On average, 30 days of the year at least one inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 70 percent of the time possible in summer and 55 percent in winter. The prevailing wind is from the south. Average wind speed is highest, 13 miles per hour, in spring.

Tornadoes and severe thunderstorms strike occasionally. These storms are local and of short duration and result in damage in narrow belts. Hailstorms occur at times during the warmer part of the year in regular patterns and in relatively small areas.

GEOLOGY

The rolling hills are mantled with wind-deposited loess of Pleistocene Age which overlie glacial till and outwash deposits. The valleys contain stream-deposited silts, clayey silts, and sands of the Modern through Pleistocene periods. The depths to bedrock range from about 100 feet in the lower valley to over 400 feet in the uplands.

Sandstones, limestones, chalks, and shales of Cretaceous Age are the bedrock units in the watershed, including the Dakota Sandstone. These units have a slight regional dip to the east.

The surficial deposits of loess can be moderate but not reliable groundwater sources. The alluvial sands and gravels associated with modern stream channels provide good quality groundwater, but their extent is usually limited. Buried paleovallies beneath the till contain sands and gravels which can provide groundwater, but again, extent is limited. The cretaceous bedrock units are poor groundwater sources, except for the Dakota Sandstone. The Dakota has been used for domestic and stock wells and can provide moderately large yields locally. However, it is not a reliable regional source: its supplies can be mineralized, and it lies at some depth beneath the surface.

ECONOMY

Social and Economic Information

Agriculture is the principal income-generating industry in the watershed area. Agriculture and ag-related businesses provide the major sources of employment.

The principal crops grown in the watershed are corn, and soybeans, with lesser amounts of alfalfa, small grains, and sorghum. Approximately 28 percent of the cropland is irrigated. The following census data (Reference 6) for years 1974, 1982, and 1987 are for all of Platte County only.

Family-owned farms are predominant in Platte County, accounting for 85 percent of the farms in 1987. While the number of farms has decreased 10 percent over the 13-year period in Platte County, the average size of farm has increased 12 percent. Between 1974 and 1987, the number of farms operated by part owners decreased by 11 percent. This trend was matched by a decline in the number of farms operated by full owners and tenants. The average age of farm operators has decreased from 47.8 years to 46.9 years over the same period. The market value of agricultural products sold increased 127 percent between 1974 and 1987. During the period 1974 to 1987 the proportion of this market value of agricultural products sold derived from crops has

decreased from 40 percent to 31 percent. In 1987, 475 operators (38 percent) reported some days of work off farm. This was two percent less than corresponding data for the State of Nebraska. Table 2 contains specific data on these items.

Table 2. SELECTED CENSUS OF AGRICULTURE, ALL FARM DATA

LOSEKE-TAYLOR WATERSHED

ITEM	UNIT	PLATTE COUNTY Year 1974	PLATTE COUNTY Year 1982	PLATTE COUNTY Year 1987	NEBRASKA Year 1974	NEBRASKA Year 1982	NEBRASKA Year 1987
Number of Farms	No.	1388	1237	1245	67,597	60,243	60,502
Size of Farms	Ac.	289	313	323	683	746	749
Value of Land & Bldgs. Per Acre	$	498	1527	1092	282	701	457
Tenure of Operator							
Full Owner	No.	536	468	495	28,674	24,840	25,301
Part Owner	No.	557	472	499	25,084	23,083	22,361
Tenants	No.	297	297	251	13,839	12,320	12,840
Operators by Age Group							
Under 25 years	%	5	7	4	4	5	4
25 to 34	%	15	19	22	12	17	17
35 to 44	%	18	16	19	17	17	19
45 to 54	%	28	23	19	26	22	19
55 to 64	%	24	24	24	25	24	23
65 and over	%	10	11	12	16	15	18
Avg. Age of Operator	Yrs.	47.8	46.8	46.9	50.3	48.5	49.4
Market Value of Ag Products Sold	$1,000	57,503	109,031	130,540	3,732,982	6,625,742	6,667,13
Crops	$1,000	22,839	45,323	40,111	1,566,036	2,379,811	2,139,11
Livestock	$1,000	34,664	63,708	90,429	2,166,946	4,245,931	4,528,01
Operators by days of work off farm							
None	No.	653	666	667	30,560	30,786	31,49
Any	No.	335	417	475	17,251	21,933	24,40
Not Reporting	No.	NA	154	103	18,453	7,524	4,60
Type of Organization							
Individual or Family	No.	NA	1062	1064	NA	51,323	51,7
Partnership	No.	NA	117	128	NA	5,608	5,2
Corporation	No.	NA	54	41	NA	3,013	3,2
Other	No.	NA	4	12	NA	299	3

Source: U.S. Department of Commerce, 1974, 1982, and 1987 Census of Agriculture, Nebraska

NA-Not Available

Population (Reference 7)

There are no incorporated towns located in the watershed. The rural population is estimated to be 1,535 people.

HISTORICAL AND ARCHAEOLOGICAL (Reference 8)

Different cultures have occupied this area since 6000-10000 B.C. Most recently, the Pawnee Tribe or their ancestors inhabited this area from approximately 1450 A.D. to the mid-1800s. These early inhabitants lived on larger streams and congregated in large groups. They lived in large circular dwellings and raised maize. Buffalo were also hunted to support their numbers.

Sixteen known archaeological sites exist within Loseke-Taylor watershed, each are located near Loseke Creek. All the major tributaries, however, may contain potentially significant cultural resources.

The first permanent Euro-American settlement was established in 1856.

NATURAL VALUES

Floodplains, in their natural or relatively undisturbed state, provide numerous beneficial natural resource values. These values include natural moderation of floods, water quality maintenance, and groundwater recharge. The physical characteristics of the floodplain regulate or modify flood flows.

The Loseke-Taylor Creeks' floodplain generally provides area for the spreading and temporary storing of floodwaters. This, in turn, reduces flood peaks and velocities, lessening the potential for erosion in the floodplain.

Floodplains serve important functions in protecting the physical, biological and chemical integrity of water. Vegetation slows the surface runoff, causing it to drop most of its sediment on the floodplain. Pathogens and toxic substances entering the main water body through surface runoff and the accompanying sediments are then decreased. The surface conditions favor local ponding detention while subsurface conditions are conducive to infiltration and storage. This slowing of runoff provides additional time for the infiltration and natural purification of water while recharging available groundwater aquifers.

RESOURCES CENSUS

The Nebraska Natural Resources Commission (NNRC), with input assistance from the Soil Conservation Service (SCS) has created a Natural Resources Data Bank. This information is derived from county soil surveys, land use, land cover information, soil loss, cropping and erosion control practice factors.

The Data Bank has provided the following resource information for Loseke-Taylor Watershed:

1. Summary of Land Use Acres and Soil Loss by Land Capability Class (LCC) (Table 3).

2. Total Land - Land Treatment and Soil Loss by LCC (Table 4).

3. Total Land Treatment and Soil Loss by Land Use (Table 5).

Table 4 summarizes soil loss by its respective land capability class within the watershed. "T" represents the allowable soil loss established for that soil series.

Table 5 summarizes soil loss and land treatment by respective land uses. Table 3 shows soil loss and land

TABLE 3 SUMMARY TABLE

LAND USE-ACRES AND SOIL LOSS BY LAND CAPABILITY CLASS

LOSEKE-TAYLOR CREEK WATERSHED

(PLATTE AND COLFAX COUNTIES)

LAND CAP. CLASS		CROPLAND DRY	CROPLAND IRR	PASTURE-LAND DRY	PASTURE-LAND IRR	RANGE LAND	FOREST LAND	OTHER FARMLAND	BARREN LAND	BUILT-UP LAND	RURAL TRANS.	WATER	TOTAL
**	ACRES	36	8	48	0	0	0	2	0	0	0	0	94
	TONS/ACRE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	ACRES	4996	4773	696	0	102	0	424	0	10	0	0	11006
	TONS/ACRE	1.31	1.20	0.49	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	1.14
2E	ACRES	7332	3356	1118	0	16	0	494	0	4	0	0	12320
	TONS/ACRE	4.17	3.63	1.46	0.00	0.34	0.00	0.00	0.00	0.00	0.00	0.00	3.70
2W	ACRES	3068	1470	1380	0	52	0	242	0	0	0	0	6232
	TONS/ACRE	1.47	1.73	0.48	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	1.24
2S	ACRES	133	0	26	0	0	0	4	0	0	0	0	168
	TONS/ACRE	1.45	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.21
3E	ACRES	27246	9630	5498	0	264	0	1144	0	8	0	0	43790
	TONS/ACRE	15.27	16.28	5.46	0.00	0.70	0.00	0.00	0.00	0.00	0.00	0.00	13.76
3W	ACRES	3590	824	292	0	66	0	118	0	0	0	0	4890
	TONS/ACRE	1.66	1.68	0.19	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	1.55
4E	ACRES	3094	930	832	0	10	0	174	0	0	0	0	5040
	TONS/ACRE	27.49	29.27	10.03	0.00	1.13	0.00	0.00	0.00	0.00	0.00	0.00	23.98
4W	ACRES	3914	98	942	0	456	0	150	0	0	0	0	5560
	TONS/ACRE	1.96	1.81	0.37	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	1.48
4S	ACRES	162	0	122	0	60	0	6	0	0	0	0	350
	TONS/ACRE	1.86	0.00	0.08	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.90
6E	ACRES	1012	202	956	0	14	0	46	0	0	0	0	2230
	TONS/ACRE	74.06	36.75	24.01	0.00	3.68	0.00	0.00	0.00	0.00	0.00	0.00	51.78
6W	ACRES	1112	292	1208	0	0	0	58	0	4	0	0	2674
	TONS/ACRE	1.27	1.07	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80
8S	ACRES	105	10	36	0	62	0	4	0	0	0	0	220
	TONS/ACRE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	ACRES	55823	21598	13154	0	1102	0	2866	0	26	0	0	94574
	TONS/ACRE	11.34	10.40	4.97	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	9.76

TABLE 4 TOTAL LAND
LAND TREATMENT AND SOIL LOSS BY LAND CAPABILITY CLASS

LOSEKE-TAYLOR CREEK WATERSHED
(PLATTE AND COLFAX COUNTIES)

LAND CAP. CLASS	TOTAL SOIL LOSS			ADEQUATE TREATMENT SOIL LOSS LESS THAN 1 T TONS/ACRE/YR			NOT ADEQUATE TREATMENT SOIL LOSS 1 T - 2 T TONS/ACRE/YR			NOT ADEQUATE TREATMENT SOIL LOSS GREATER THAN 2 T TONS/ACRE/YR		
	TOTAL ACRES	SOIL LOSS (1000 TONS)	SOIL LOSS TONS/ACRE/YR	EST. ACRES	SOIL LOSS (1000 TONS)	SOIL LOSS TONS/ACRE/YR	EST. ACRES	SOIL LOSS (1000 TONS)	SOIL LOSS TONS/ACRE/YR	EST. ACRES	SOIL LOSS (1000 TONS)	SOIL LOSS TONS/ACRE/YR
**	94	0.0	0.00	94	0.0	0.00	0	0.0	0.00	0	0.0	0.00
1	11006	12.6	1.15	11006	12.6	1.15	0	0.0	0.00	0	0.0	0.00
2E	10262	34.2	3.34	5726	6.5	1.14	4438	26.7	6.02	98	1.0	10.37
2W	6232	7.8	1.24	6232	7.8	1.24	0	0.0	0.00	0	0.0	0.00
2S	168	0.2	1.21	168	0.2	1.21	0	0.0	0.00	0	0.0	0.00
3E	38808	473.4	12.20	5830	5.8	1.00	16160	108.5	6.71	16818	359.1	21.35
3W	4890	7.6	1.55	4884	7.6	1.55	6	0.0	4.06	0	0.0	0.00
4E	11238	236.6	21.05	648	0.5	0.75	736	5.1	6.95	9854	231.0	23.44
4E*	842	25.0	29.75	10	0.0	0.00	78	0.7	9.13	754	24.3	32.28
4W	5520	8.2	1.48	5468	8.0	1.47	52	0.1	2.33	0	0.0	0.00
4W*	40	0.1	1.78	40	0.1	1.78	0	0.0	0.00	0	0.0	0.00
4S	350	0.3	0.90	350	0.3	0.90	0	0.0	0.00	0	0.0	0.00
6E	2028	98.0	48.30	310	0.9	2.78	42	0.3	7.45	1676	96.8	57.74
6E*	202	17.5	86.75	6	0.0	2.45	0	0.0	0.00	196	17.5	89.33
6W	2382	1.8	0.77	2342	1.7	0.74	40	0.1	2.25	0	0.0	0.00
6W*	292	0.3	1.07	242	0.2	0.76	50	0.1	2.53	0	0.0	0.00
8S	210	0.0	0.00	210	0.0	0.00	0	0.0	0.00	0	0.0	0.00
8S*	10	0.0	0.00	10	0.0	0.00	0	0.0	0.00	0	0.0	0.00
TOTAL	94574	923.6	9.77	43576	52.2	1.20	21602	141.7	6.56	29396	729.7	24.82

** Other Land Capability Class categories like water body, quarry, cut and fill land.

NOTE:
1. Rural transporation acres have not been adjusted.
2. Soil loss is calulated for the sheet and rill water erosion only.
3. T-values represent the soil loss limits as established for the soil series.
4. The total land acres may not match because of rounding of acre values.
5. For terraced land, slope length is set equal to 150 ft. Soil types which have slope lengths less than 150 ft are set equal to 150 ft in LS-factor computations.

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TABLE 5 TOTAL LAND

LAND TREATMENT AND SOIL LOSS BY LAND USE

LOSEKE-TAYLOR CREEK WATERSHED

(PLATTE AND COLFAX COUNTIES)

LAND USE	TOTAL SOIL LOSS			ADEQUATE TREATMENT SOIL LOSS LESS THAN 1 T TONS/ACRE/YR			NOT ADEQUATE TREATMENT SOIL LOSS 1 T - 2 T TONS/ACRE/YR			NOT ADEQUATE TREATMENT SOIL LOSS GREATER THAN 2 T TONS/ACRE/YR		
	TOTAL ACRES	SOIL LOSS (1000 TONS)	SOIL LOSS TONS/ACRE/YR	EST. ACRES	SOIL LOSS (1000 TONS)	SOIL LOSS TONS/ACRE/YR	EST. ACRES	SOIL LOSS (1000 TONS)	SOIL LOSS TONS/ACRE/YR	EST. ACRES	SOIL LOSS (1000 TONS)	SOIL LOSS TONS/ACRE/YR
10	55828	633.4	11.34	21666	32.9	1.52	13940	91.9	6.59	20222	508.6	25.15
1S	20580	215.4	10.47	8520	10.9	1.28	4700	29.3	6.23	7360	175.3	23.82
1F	1002	9.0	8.99	792	1.4	1.83	74	0.3	3.70	136	7.3	53.55
1T	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00
1B	16	0.2	11.24	8	0.0	1.07	0	0.0	0.00	8	0.2	21.41
1C	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00
20	13154	65.3	4.97	8596	6.6	0.77	2888	20.3	7.03	1670	38.4	23.00
2F	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00
2S	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00
2T	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00
2B	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00
2C	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00
25	1102	0.3	0.29	1102	0.3	0.29	0	0.0	0.00	0	0.0	0.00
30	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00
40	2866	0.0	[illegible]	[illegible]	[illegible]	[illegible]	0	0.0	0.00	0	0.0	0.00
50	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00
60	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00
70	26	0.0	0.00	26	0.0	0.00	0	0.0	0.00	0	0.0	0.00
80	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00
90	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00
TOTAL	94574	923.6	9.77	43576	52.2	1.20	21602	141.7	6.56	29396	729.7	24.82

NOTE:
1. Rural transporation acres have not been adjusted.
2. Soil loss is calulated for the sheet and rill water erosion only.
3. T-values represent the soil loss limits as established for the soil series.
4. The total land acres may not match because of rounding of acre values.
5. For terraced land, slope length is set equal to 150 ft. Soil types which have slope lengths less than 150 ft are set equal to 150 ft in LS-factor computations.

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LAND USE CLASSIFICATION	
10 NONIRRIGATED CROPLAND	1S SPRINKLER IRRIGATED CROPLAND
1F SURFACE IRRIGATED CROPLAND	1T TAILWATER IRRIGATED CROPLAND
1B FIELD BENCH IRRIGATED CROPLAND	1C CONTOUR BENCH IRRIGATED CROPLAND
20 PASTURE LAND	2F SURFACE IRRIGATED PASTURE LAND
2S SPRINKLER IRRIGATED PASTURE LAND	2T TAILWATER IRRIGATED PASTURE LAND
2B FIELD BENCH IRRIGATED PASTURE LAND	2C CONTOUR BENCH IRRIGATED PASTURE LAND
40 OTHER FARMLAND	50 PITS AND QUARRIES
	70 BUILT UP LAND

treatment by land use as further broken down by land capability class.

Soil loss is calculated for sheet and rill erosion only; ephemeral erosion is not considered.

PRIME FARMLAND

Prime farmland, as defined by USDA, is land that is best suited to food, feed, forage, fiber, and oilseed crops. It may be cultivated, pastureland, woodland, or other land, but it is not urban, built-up land or water areas. It either is used for food or fiber crops or is available for those crops.

The soil qualities, growing season, and moisture supply are those needed for a well managed soil to produce a sustained high yield of crops in an economic manner. Prime farmland produces the highest yields with minimal inputs of energy and economic resources. The farming of it results in the least damage to the environment.

Prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The level of acidity or alkalinity is acceptable. Prime farmland has few or no rocks and is permeable to water and air. It is not

excessively erodible or saturated with water for long periods and is not frequently flooded during the growing season. The slope ranges mainly from 0 to 6 percent.

Approximately 38 percent or 36,000 acres are considered to be prime farmland within Loseke-Taylor watershed.

FORESTRY

Loseke-Taylor watershed contains little woodland. The limited areas which do exist are in fence rows and windbreaks or located along stream channels and bottomlands. Elms, black willow, eastern cottonwood, eastern redcedar, green ash and Russian mulberry are scattered in these areas and increase in number in the lower reaches of drainageways.

WILDLIFE

The variety of both game and non-game wildlife reflect a diversity of the natural resources that exist in the study area. Three distinct habitat types exist in Loseke-Taylor: grasslands, confined mainly to the upland area; croplands, located within and adjacent to the floodplain and woodlands, scattered throughout the watershed.

The upper reaches of the watershed provide habitat for upland wildlife such as pheasant, bobwhite quail, cottontail, squirrel, meadowlark and red fox.

In the lower reaches along stream channels more cover is provided. Here wildlife can include white-tailed deer, squirrel, opossum, cottontail, fox, bobwhite quail and pheasant. In addition, predatory hawks, owls, eagles and songbirds can be associated with the wooded areas. Mourning doves are found throughout the watershed.

Generally, in the cropland areas, spring tillage is used allowing crop residues to be present over winter. These residues provide food and cover for wildlife but are generally not effective for winter protection. Only 15 percent of the watershed is pastureland, which provides the nesting cover for the ground nesting birds and cottontail rabbits. Woody vegetation provides the most effective winter protection but only occupies less than one percent of the watershed and is found along creek bottoms, drainageways and farmstead windbreaks. Consequently, winter cover is scarce and is generally not available near cropped fields. This lack of cover limits production of wildlife in this watershed.

Loseke-Taylor watershed with its proximity to significant river systems, the Todd Valley wetlands and

other impoundments, lies within an important migration corridor of the central fly way. Numerous migratory ducks, geese, swans, and shorebirds pass through the area.

THREATENED AND ENDANGERED SPECIES

No known threatened or endangered species of wildlife is a permanent resident of this area. However, the following list identifies those species whose range may possibly include Loseke-Taylor watershed:

Birds

Interior Least Tern	Sterna antillarum
Piping Plover	Charadrius melodus
Peregrine Falcon	Falco peregrinus
Bald Eagle	Haliaeetus leucocephalus
Eskimo Curlew	Numinous borealis

Plants

Western Prairie Fringed Orchid	Platanthera praeclara

WATER QUALITY

Major tributaries of Loseke-Taylor Watershed include: Taylor Creek, Loseke Creek, Schaad Creek, Spring Creek, and two unnamed tributaries.

The Nebraska Department of Environmental Control classified the water in all of Loseke-Taylor Watershed as Warmwater Class B (Reference 9). Classification as Warmwater Class B means the variety of warmwater biota is

presently limited by water volume or flow, water quality (natural or irretrievable human-induced conditions), substrate composition, or other habitat conditions. These waters are only capable of maintaining year-round populations of tolerant warmwater fish and associated vertebrate and invertebrate organisms and plants. Key species may be supported on a seasonal or intermittent basis but year-round populations cannot be maintained (Reference 10).

Loseke Creek is currently the only tributary which fully supports its assigned aquatic life use. The remaining tributaries are not rated due to lack of data.

The waters are also classified as Class A Agricultural. This classification means these waters can be used for general agricultural purposes such as irrigation and livestock watering without treatment. Levels of nitrate and nitrite as nitrogen does not exceed 100 mg/l, the selenium does not exceed 0.02 mg/l, and conductivity does not exceed 2000 umhos/cm. The water is also aesthetically acceptable. It is free from human induced pollution which causes noxious odors; floating, suspended, colloidal, or settleable materials that produce objectionable films, colors, turbidity, or deposits; and the occurrence of undesirable or nuisance aquatic life such as algal blooms.

GROUNDWATER

The groundwater in this part of the state is highly variable in quantity and quality. Groundwater found in bedrock is mineralized and in many areas too highly mineralized to be potable.

Groundwater also has variable vulnerability to contamination, the highest vulnerability being found in stream valleys with shallow depths to groundwater. Documented groundwater contamination in this region has occurred primarily from waste disposal activities. In addition, groundwater contamination from agricultural chemicals has occurred in some areas of shallow groundwater.

PROBLEMS AND OPPORTUNITIES

FLOODING

Floods occurring during the growing season inflict damage to crops in the form of siltation as well as damage resulting from high water. The situation is further aggravated by the fact that, in periods of large runoff, floodwater is prevented from entering Shell Creek. This can occur if Shell Creek is at flood stage simultaneously with Loseke Creek. This would result in water being held on the lower floodplains for a longer length of time destroying growing crops, and inflicting considerably more damage to property and livestock than could be expected if the runoff could readily escape.

Land use in the floodplain consists of 5300 acres of cropland, 500 acres of pastureland, and 300 acres of other land. Current cropland includes 2400 acres of corn, 2300 acres of soybeans, 300 acres of alfalfa, 200 acres of wheat, and 100 acres of grain sorghum. Crop and pasture damages are estimated to be $81,620 annually. Crop and pasture damages begin with the 1/2-year flood. Data regarding estimates for crop and pasture damages are shown on Table 6.

Other agricultural properties located in the floodplain include 77 farmsteads, an estimated nine miles of private

TABLE 6

CROP AND PASTURE FLOOD DAMAGE 1/

EVALUATION REACH 2/	FLOOD PLAIN (AC)	PRODUCTION		DAMAGE		
		FLOOD FREE 3/	FLOODED 4/	AVERAGE ANNUAL TOTAL 5/	PER ACRE 6/	PERC OF F FREE
1	197	$39,250	$38,400	$850	$4	2.
2	77	$16,130	$15,950	$180	$2	1.
3	879	$174,240	$165,120	$9,120	$10	5.
4	726	$158,330	$146,200	$12,130	$17	7.
5	319	$73,600	$69,710	$3,890	$12	5.
6	782	$176,400	$166,400	$10,000	$13	5.
7	371	$84,430	$73,260	$11,170	$30	13.
8	65	$12,840	$12,610	$230	$4	1.
9	345	$67,770	$65,610	$2,160	$6	3.
10	799	$181,530	$164,090	$17,440	$22	9.
11	113	$24,140	$23,360	$780	$7	3.
12	1110	$232,370	$223,480	$8,890	$8	3.
13	298	$57,270	$52,490	$4,780	$16	8.
TOTAL	6081	$1,298,300	$1,216,680	$81,620	$13	6.

1/ Price Base- 1992
2/ Evaluation reaches are shown on the Evaluation Reach Map, (Figure
3/ Composite acre value x acres in floodplain (yield x price x % in floodplain x acres in floodplain).
4/ Flood Free minus Average Annual Total.
5/ Crop and Pasture damages occurring in the floodplain as determine ECON-2.
6/ Average Annual Total divided by Floodplain Acres
7/ Average Annual Total divided by Flood Free values.

EVALUATION REACH MAP

LOSEKE-TAYLOR WATERSHED

COLFAX & PLATTE COUNTIES

FIGURE 1

roads, and 46 miles of fences. Total average annual damage to other agricultural property is estimated to be $8,160.

Roads and bridges subject to damage include 1.6 miles of federal and state roads, 40 miles of county roads, and 33 road bridges. Damages to roads include the replacement of surface materials, the removal of sediment from the ditches and erosion of the road banks near or at the end of bridges. These damages are estimated to be $16,300 annually.

The total average annual damages of present floodwater problems are estimated to be $106,080 (Table 7).

TABLE 7

Present Average Annual Floodwater Damages
for All Land Use (1992 Dollars)

	Estimated Average Annual Flood Damage
Crop and Pasture	$81,620
Other Agriculture	8,160
Roads and Bridges	16,300
Total	$106,080

EROSION AND SEDIMENT

Sheet and rill erosion is a moderately severe problem on untreated cropland throughout the watershed. Rates exceeding 25 tons per acre are easily found on non-irrigated cropland and can be higher on some irrigated land. Ephemeral gully erosion on untreated cropland is a significant problem and ephemeral deposition is moderately severe. Channel erosion sources such as traditional gullies and streambanks are not significant. Degradation of channel bottoms is low; channel banks are usually stable and well vegetated, although local erosion can occur.

Sediment derived from upstream fields does contribute to downstream floodplain and off-site damage. Likewise, roadside deposition can be substantial. Water quality can be impaired by sediment from the fields and associated chemicals, especially during runoff events.

EXISTING FLOODPLAIN MANAGEMENT

Colfax County, Nebraska (Reference 11) entered the Regular Program of the National Flood Insurance Program, February 1, 1987. Platte County, Nebraska (Reference 12) entered the Regular Program of the National Flood Insurance Program, September 1, 1990. These counties have implemented floodplain management programs which meet State and Federal minimum requirements for floodplain management programs and regulate all new development in designated 100-year floodplains.

The data included in this Floodplain Management Study (FPMS) is comparable to a detailed flood insurance study.

ALTERNATIVES FOR FLOODPLAIN MANAGEMENT

Floodplain management encourages land use and development which minimizes potential flood damage and, at the same time permits floodplain development which is compatible with nature and the local area needs. Floodplain management objectives include:

1. Restricting building or other development which may cause increased flood heights or velocities.

2. Protecting individuals from investments located in flood hazard areas which are subject to frequent damage and flooding.

3. Prohibiting uses which are dangerous to public health or safety in times of flood.

4. Requiring that public or private facilities that are vulnerable to floods be protected against flood damage at the time of construction.

The achievement of these objectives is possible by implementing a floodplain management program. Such a program ordinarily requires community or group action for implementation. A floodplain management program or system can be composed of a combination of land treatment, nonstructural, and structural measures. Figure 2 illustrates the relationship of these measures. Using these alternatives, several potential courses of action can be considered:

PRESENT CONDITION (No Action)

Existing erosion problems would continue or become worse. The property owners presently subject to flooding have flood insurance available to them to cover structures and their contents for flood losses.

LAND TREATMENT

Land treatment provides opportunities to reduce upland runoff and soil erosion, while improving the water quality. The traditional approach of conservation land treatment, of working with landowners to install conservation practices, will minimize soil erosion, reduce flooding from the more frequent storms, and provide water quality benefits. Installation of such measures as terraces, grassed waterways or underground outlets, diversions, permanent vegetative cover, improved pastureland management, conservation tillage, and on site water storage will reduce runoff, erosion, and sedimentation. This approach provides excellent water quality benefits. However, it will have minimal effects on the large rainfall events.

PRESERVATION AND/OR RESTORATION OF NATURAL VALUES

Since the primary value of the Loseke-Taylor floodplain is its ability to transport floodwaters, encroachment onto the floodplain with obstacles which interfere with floodwater movement should be avoided to preserve its present carrying capacity. Currently, none of the floodplain is urban. If any of the floodplain were to be urbanized, the floodplain area should be maintained as parks, baseball fields and other traditional park

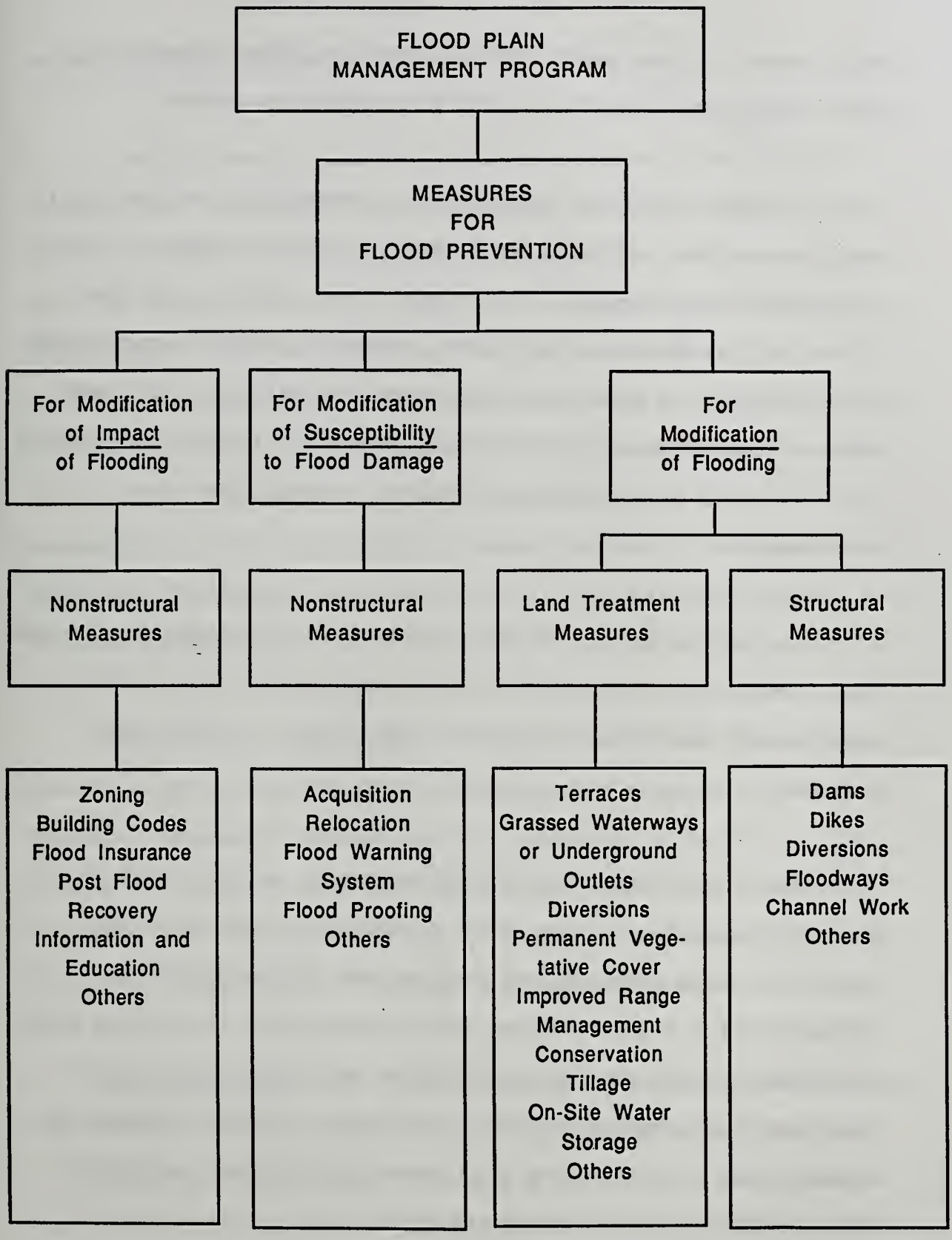
FLOOD PLAIN MANAGEMENT PROGRAM
MEASURES FOR FLOOD PREVENTION
For Modification of Impact of Flooding
For Modification of Susceptibility to Flood Damage
For Modification of Flooding
Nonstructural Measures
Nonstructural Measures
Land Treatment Measures
Structural Measures
Zoning
Building Codes
Flood Insurance
Post Flood Recovery
Information and Education
Others
Acquisition
Relocation
Flood Warning System
Flood Proofing
Others
Terraces
Grassed Waterways or Underground Outlets
Diversions
Permanent Vegetative Cover
Improved Range Management
Conservation Tillage
On-Site Water Storage
Others
Dams
Dikes
Diversions
Floodways
Channel Work
Others

Figure 2

facilities. These parks would insure an open floodplain which would not interfere with floodwater movement.

The floodplain is biologically important because it is the place where land and water meet, where elements of both terrestrial and aquatic ecosystems mix. Shading of the stream by floodplain vegetation moderates water temperature; roots and fallen trees provide instream habitat; and near stream vegetation filters runoff, removing harmful sediments and buffering pollutants to further enhance instream environments.

The preservation of open space areas in accordance with soil limitation and good land use management will reduce development hazards and prevent additional future flood damages.

Soils with high water tables should be retained in natural vegetation. The Soil Conservation Service has completed soil surveys for Colfax and Platte Counties (References 4 & 5). Copies of the material, including maps and interpretations, are available for reference in the local Soil Conservation Service Office. This information can be used to determine soil types in a given area and their limitations for various uses.

NONSTRUCTURAL MEASURES

Nonstructural measures such as land use and control regulations (zoning), building codes, flood insurance, post flood recovery are primarily administrative actions. These actions may be needed to reduce the impact of flooding, especially in areas which may be subjected to future development pressures. Although there are no urban areas in this study, there are a few existing farmsteads within the floodplain. Nonstructural measures to reduce the susceptibility to flooding to these include 1) relocation of existing floodplain properties, 2) flood warning system, and 3) flood proofing.

Zoning is a legal method used to implement and enforce the details of the floodplain management program, to preserve property values, and to achieve the most appropriate and beneficial use of available land. Clear, concise, and thorough zoning bylaws with enforcement of the bylaws are essential to making zoning effective.

Building codes set up minimum standards for controlling the design, construction, and quality of materials used in buildings and structures within a given area. They provide safety for life, health, property and public welfare. Building codes can be used to minimize structural and subsequent damages resulting from inundation.

Flood insurance was established by the National Flood Insurance Act of 1968 Public Law 90-448, as amended (Reference 13) to make limited amounts of flood insurance, which were previously unavailable from private insurers, available to property owners and occupiers. The Flood Disaster Protection Act of 1973, Public Law 93-234, as amended, (Reference 14) was a major expansion of the National Flood Insurance Program.

Flood insurance is available through local insurance agents and brokers only after a local governing body applies and is declared eligible for the program by the Federal Insurance and Hazard Mitigation Division of the Federal Emergency Management Agency (FEMA). Adoption and enforcement of a local floodplain management ordinance, which meets FEMA and State minimum floodplain management criteria, is necessary to qualify and maintain eligibility.

In those communities participating in the FEMA program, owners and occupiers of all buildings and mobile homes in the entire community are eligible to obtain flood insurance coverage. Where flood insurance is available, it is recommended that buildings and mobile homes within or adjacent to the delineated flood hazard areas carry flood insurance on the structure and contents.

Development policies designed to prevent construction of streets and utility systems in flood prone areas will limit development of the floodplains.

Emergency preparedness consists of a plan by local officials to be put into effect in the event of flooding. Procedures are worked out and personnel designated to implement the plan. The emergency preparedness plan would describe methods and procedures to alert and warn the populous of possible flooding. High risk areas, and individuals who are handicapped, elderly or others known to need help during evacuation are located and identified. Plans are made for their evacuation or rescue. Shelters are provided for evacuees.

Relocation of existing floodplain properties is intended to reposition residential, commercial, industrial, and farm buildings on flood free land. Land that is evacuated for relocation should have a restriction in the deed or other recorded restrictions to prohibit rebuilding on that land. Such lands could be used for parks or other purposes that would not be subject to large flood damages and would not interfere with flood flows.

Flood Warning Systems are used to notify floodplain occupants of potential flooding in time to protect property from damage, to evacuate the area, or both. These warnings

can be initiated by 1) The National Weather Service which issues frequent warnings of potential flood producing storms; 2) Staff gauges, which are set at key locations and monitored to give advance warnings; and 3) A float-activitated electronic signal which is connected to the local police or fire station for monitoring. An effective forecasting and warning system must be supported by an emergency action plan.

Flood Proofing consists of work on individual buildings such as blocking of low level entrances and windows, installing one way valves in drains, strengthening walls and foundation, installing protective walls, and elevating the building or contents above the base flood (1% recurrence interval) elevation to minimize flood losses.

STRUCTURAL MEASURES

Structural measures are installed to provide reduction in damages from flooding, erosion, and sediment deposition. These damages occur to cropland, pastureland, roads, bridges, urban areas, public and private utilities. Structural measures may also be installed for multiple purposes such as recreation, fish and wildlife enhancement, municipal water supply and other uses. Measures considered for this watershed included dams, levees, floodways and

channel modification. These measures were studied but none were economically feasible in the watershed.

COMBINATION OF ALTERNATIVES

Some future floodplain management programs which appear applicable for Loseke-Taylor Watershed, Nebraska follow:

Alternative 1 - No Action

Components: This alternative would consist of continuing participation in the Regular Program of the National Flood Insurance Program.

Effects: New development in the floodplain will be regulated and flood insurance will continue to be available to cover structures and their contents for flood losses.

Alternative 2 - Land Treatment

Components: This alternative consists of land treatment measures.

Effects: Land treatment would reduce erosion and sediment from upland areas.

FLOOD HAZARD MAPS

The Sheet Index Map (Appendix A) shows the stream reach covered by each of the Flood Hazard Maps. The Sheet Index Map also shows the watershed boundaries and stream reaches studied.

The limits of the 0.2 percent and 1 percent recurrence interval floods were delineated on Flood Hazard Maps (Appendix A) to indicate the extent of area inundated. The flood lines shown are based on field surveys of roads, bridges, valley sections, and interpretation of aerial photographs. These maps should only be used to determine the approximate boundaries of the flood areas. Actual dimensions measured on the ground may vary slightly from those shown on the photomaps of this report due to map scale and reproduction limitations. The water surface profiles (Appendix B) for the 0.2, 1, 2, and 10 percent floods should be used to determine actual on-the-ground dimensions.

To determine expected flood levels at a specific location, use the Sheet Index (Appendix A). Refer to the appropriate Flood Hazard Maps (Appendix A) to determine the location of the nearest surveyed section and the general area affected. Refer to the adjacent plotted water surface profiles (Appendix B) to determine the mean sea level flood elevations for that location. Profile elevations

(Appendix C) may also be used to determine the extent or depth of flooding in any given area by use of detailed field surveys.

In cases where the 0.2 and 1 percent flood boundaries are close together only the 1 percent boundary has been shown.

Flood elevations in this report are minimum elevations. Debris may collect at bridges and culverts and clog the channels during major floods and increase the depth of flooding. Analyses were made without showing the effects of potential obstructions. Also, extremely rare events such as catastrophic storms, beyond the 0.2 percent storm, were not analyzed.

GLOSSARY

Backwater -- The resulting high water surface upstream from a dam, bridge or other obstruction in a floodplain.

Basin -- An area which has its runoff collect at a common point.

Channel -- A natural stream that conveys water; a ditch or trench excavated for the flow of water.

Channel Bottom -- The elevation of the deepest part of a stream channel, the thalweg, at a particular cross section.

Confluence -- A flowing together or place of junction of two or more streams.

Cross section or valley section -- A graph showing the shape of the streambed, banks and adjacent land on either side made by plotting elevation at measured distances along a line perpendicular to the flow of the stream.

Datum -- An assumed reference plan from which elevations and depths are measured such as from sea level.

Elevation-Discharge Relationship -- The relationship between water surface elevation and rate of flow at a specified location for a range of flow rates.

Encroachment -- Obstruction in part of a floodplain which reduces floodwater carrying capacity, therefore increasing flood stages.

Flood -- An overflow of water on to land not normally covered by water. This inundation of land is temporary, and the land is normally adjacent to a river or stream, lake, or other body of water. Normally, a "flood" is considered as any temporary rise in stream flow or stage that causes a significant adverse effect. Adverse effects would be damage to property, sewer backup, creation of unsanitary conditions, sedimentation, accumulation or debris, or other problems.

Flood Peak -- The maximum instantaneous discharge of flow in cubic feet per second passing a given location. It usually occurs at or near the time of the flood crest.

Floodplain -- The relatively flat area or low lands covered by floodwaters adjacent to a watercourse such as a river or stream.

Flood Routing -- The process of determining progressively the timing and shape of a flood wave at successive points along a stream. This procedure is used to derive a downstream hydrograph from an upstream hydrograph. Local inflow and tributary hydrographs are considered.

Floodway -- The portion of the floodplain including the channel of the stream that is required for the conveyance of flood flow. The limits of the floodway are those limits where the extent of permitted encroachment would not raise the level of the 1% frequency flood more than one foot.

Flood Fringe -- The area of the 1 percent frequency floodplain lying outside of the floodway.

Head Loss -- The effect of obstructions, such as narrow bridge openings, dams or buildings that limit the area through which water must flow, resulting in an increase in depth of flow upstream from the obstruction. The difference in the flow depths upstream and downstream of the obstruction.

Headwater -- The tributaries and upper reaches which are the sources of the stream.

High Water Mark (HWM) -- The maximum observed and recorded height or elevation that floodwater reaches during a storm, usually associated with the flood peak. The high water mark may be referenced to a particular building, bridge, or other landmark, or based on debris deposits on bridges, fences, or other evidence of the flood.

Hydraulics -- The science of the laws governing the motion of water and their practical applications.

Hydrograph -- A graph denoting the discharge over a period of time.

Hydrology -- The science dealing with the occurrence and movement of water upon and beneath the land areas of the earth.

Inundation -- The flooding or overflow of an area with water.

Left Bank -- The bank of the left side of a river, stream or water course, when oriented downstream.

Low Bank -- The highest elevation of a specific channel cross section at which the water will be contained without overflowing onto adjacent floodplain areas.

Low Ground -- The highest elevation at a specific stream channel cross section at which the flow in the stream can be contained in the channel without overflowing into adjacent overbank areas.

Manning's "n" -- A coefficient of channel and overbank roughness used in Manning's open channel flow formula, commonly called a retardance factor.

Reach Length -- A longitudinal length of stream channel selected for use in hydraulic or other computations.

Recurrence Interval -- The average interval of time within which the given flood will be equaled or exceeded once. A flood having a recurrence interval of 10 years is one that has a 10 percent chance of recurring in a year. Likewise, a 50-year flood has a 2 percent chance, and a 100-year flood has a 1 percent chance, of recurring in any year.

Right Bank -- The bank on the right side of the river, stream or watercourse, when oriented downstream.

Runoff -- That portion of the precipitation on a drainage area that is discharged from the area in stream channels: types include surface runoff, groundwater runoff, or seepage.

Surcharge -- Increase in depth of floodwaters in floodway.

Time of Concentration -- Time required for water to flow from the most remote point of a watershed to the outlet or other point of reference.

Water Surface Profile -- A graph showing the relationship of water surface elevation to stream channel location for a specific flood event.

Watershed -- A drainage basin or area which collects runoff and transmits it usually by means of streams and tributaries to the outlet of the basin.

Watershed Boundary -- The divide separating one drainage basin from another.

0.2 Percent Chance Flood -- A flood that has a 0.2 percent probability of occurring in any given year This storm is classified as an extreme event, but it is not impossible. It is often referred to as the 500-year flood. It has an average frequency of occurrence in the order of once in 500 years, although the flood may occur in any given year or even in successive years.

1 Percent Chance Flood -- This event is often referred to as the 100-year flood. Contrary to popular belief, the 100-year flood is not defined as "a flood occurring once every 100 years". The 100-year flood is properly defined as, "a flood having a 1 percent probability of occurring in any given year". Thus, it is more properly referred to as a "1 percent frequency flood", although the term "100-year flood", is more popular. Statistically the 1 percent flood has an average frequency of occurrence in the order of once in 100 years, although the flood may occur in any given year or even in successive years. The 1 percent flood magnitude is based on statistical analysis of stream flow records available for the watershed and analysis of rainfall and runoff characteristics in a general region of the watershed. For these reasons, the magnitude of the 1 percent flood is different for each different watershed and even different areas of the same watershed.

2 Percent Chance Flood -- This event is often referred to as the 50-year flood. A flood that has a 2 percent probability of occurring in any given year. It is more properly referred to as a "2 percent frequency flood", although the term "50-year flood" is more popular. Statistically the 2 percent flood has an average frequency of occurrence in the order of once in

50 years, although the flood may occur in any given year or even in successive years.

10 Percent Chance Flood -- This event is often referred to as the 10-year flood. This flood has a 10 percent probability of occurring in any given year. It is more properly referred to as a "10 percent frequency flood", although the term "10-year flood" is more popular. Statistically the 10 percent flood has an average frequency of occurrence in the order of once in 10 years, although the flood may occur in any given year or even in successive years.

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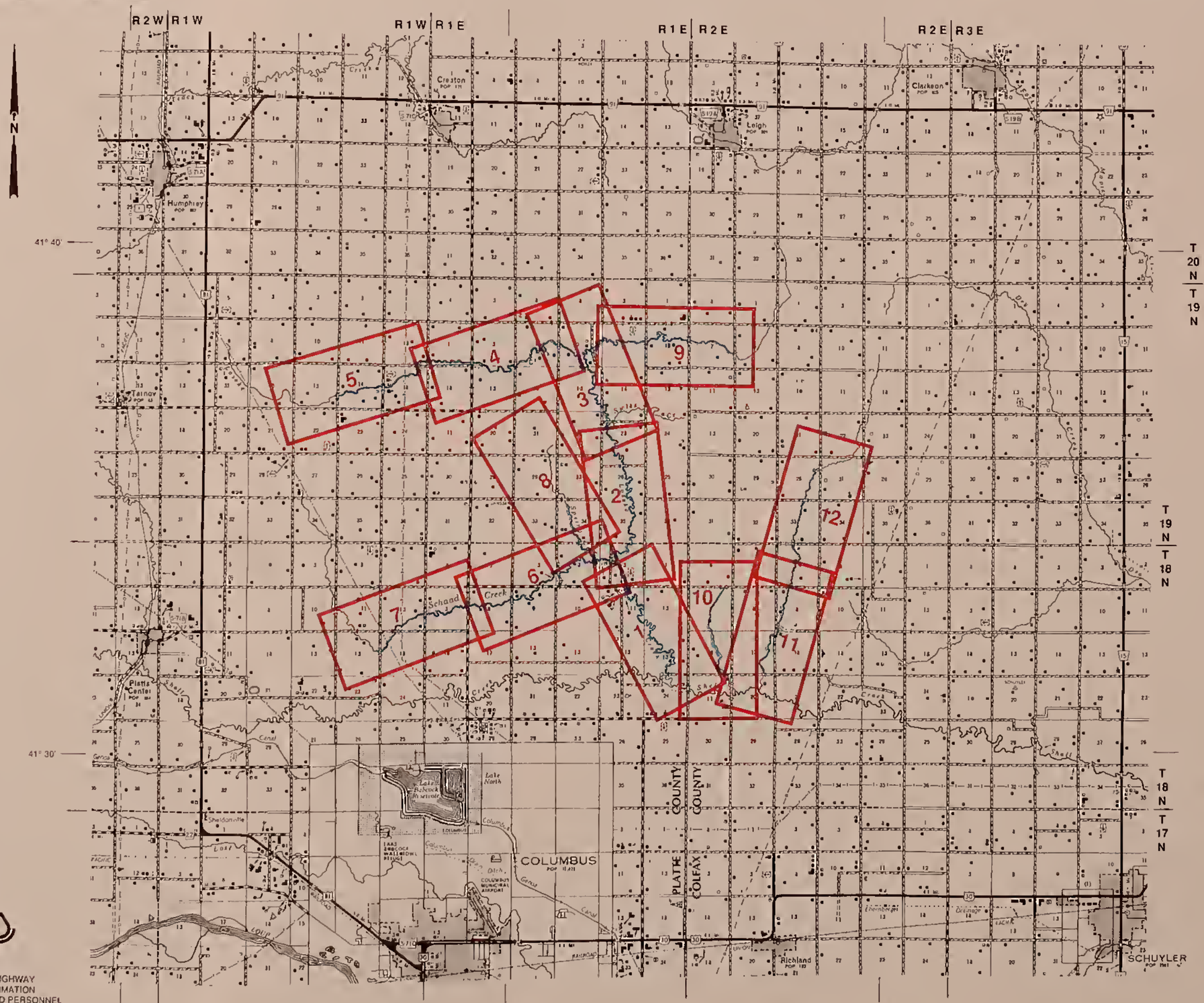
APPENDIX A

FLOOD HAZARD MAPS

U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE



VICINITY MAP

LEGEND

12 SHEET COVERAGE

STREAM REACHES

INDEX TO MAP SHEETS

LOSEKE-TAYLOR CREEKS FLOOD PLAIN MANAGEMENT STUDY

COLFAX AND PLATTE COUNTIES, NEBRASKA

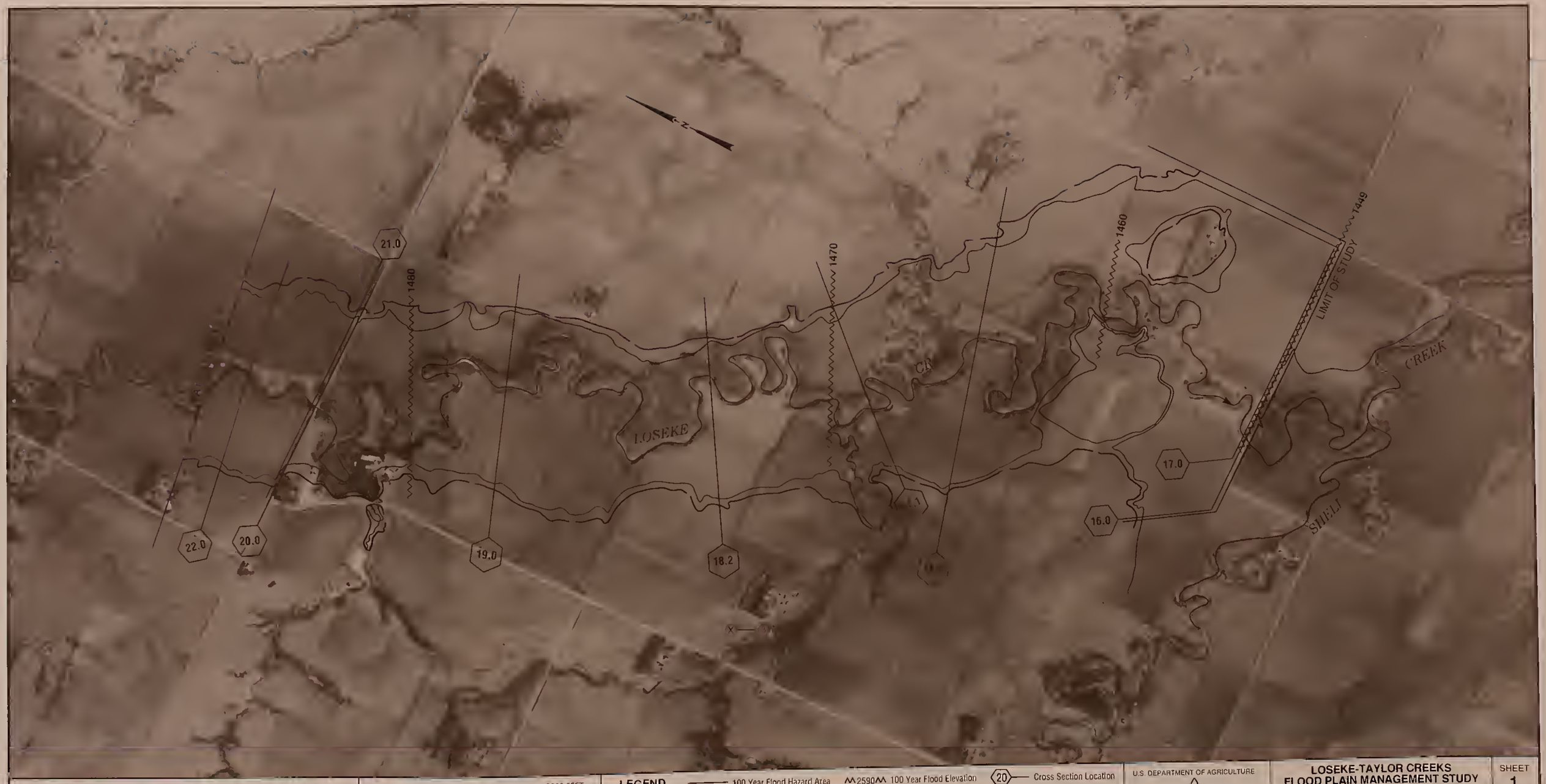
0 1 2 3 4 5
MILES

0 1 2 3 4 5
KILOMETERS

SOURCE
1977 COUNTY HIGHWAY MAP AND INFORMATION FROM SCS FIELD PERSONNEL
LAMBERT CONFORMAL CONIC PROJECTION.

OCTOBER 1993 1007601-01

USDA SCS NATIONAL CARTOGRAPHY & GIS CENTER, FORT WORTH, TX 1994



NOTE: LIMITS OF FLOODING SHOWN MAY VARY FROM ACTUAL LOCATIONS ON THE GROUND AND DUE TO INHERENT AERIAL PHOTOGRAPHIC DISPLACEMENT THE PHOTOGRAPHIC IMAGE MAY VARY FROM TRUE GROUND LOCATIONS.

Nebraska Natural Resources Commission
1988 Photography

SCALE
0 1000 2000 FEET
0 200 400 600 METERS

LEGEND

- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- (X)-(1)-(X) Evaluation Reach
- (20) Cross Section Location
- Limit of Study

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

LOSEKE-TAYLOR CREEKS FLOOD PLAIN MANAGEMENT STUDY

COLFAX & PLATTE COUNTIES, NEBRASKA

SHEET 1

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Nebraska Natural Resources Commission
1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND

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- Limit of Study

U.S. DEPARTMENT OF AGRICULTURE
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COLFAX & PLATTE COUNTIES, NEBRASKA

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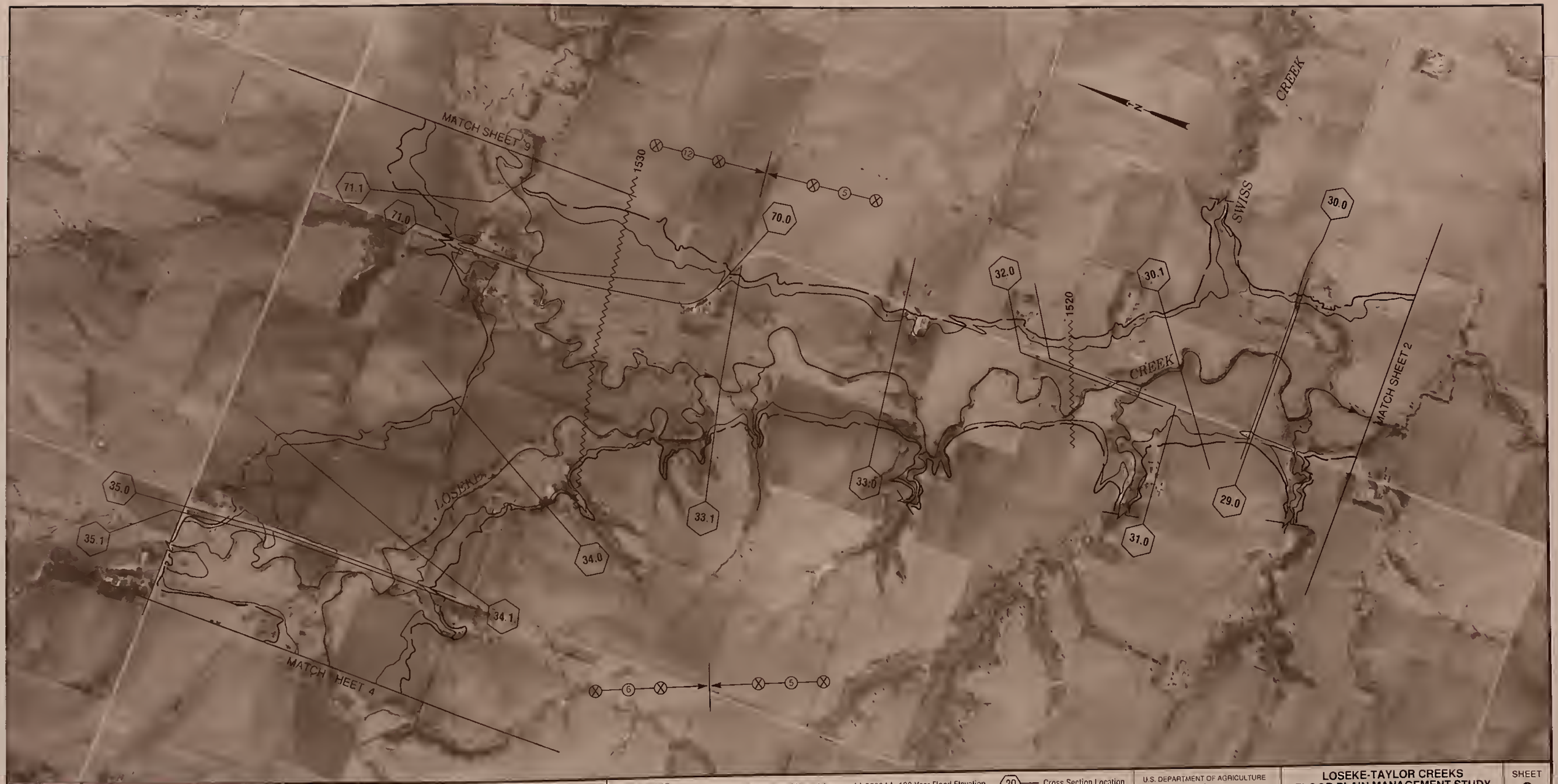

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U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

LOSEKE-TAYLOR CREEKS FLOOD PLAIN MANAGEMENT STUDY

COLFAX & PLATTE COUNTIES, NEBRASKA

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Nebraska Natural Resources Commission
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- (X)-(1)-(X) Evaluation Reach
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U.S. DEPARTMENT OF AGRICULTURE
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COLFAX & PLATTE COUNTIES, NEBRASKA

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- Limit of Study

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

LOSEKE-TAYLOR CREEKS
FLOOD PLAIN MANAGEMENT STUDY
COLFAX & PLATTE COUNTIES, NEBRASKA

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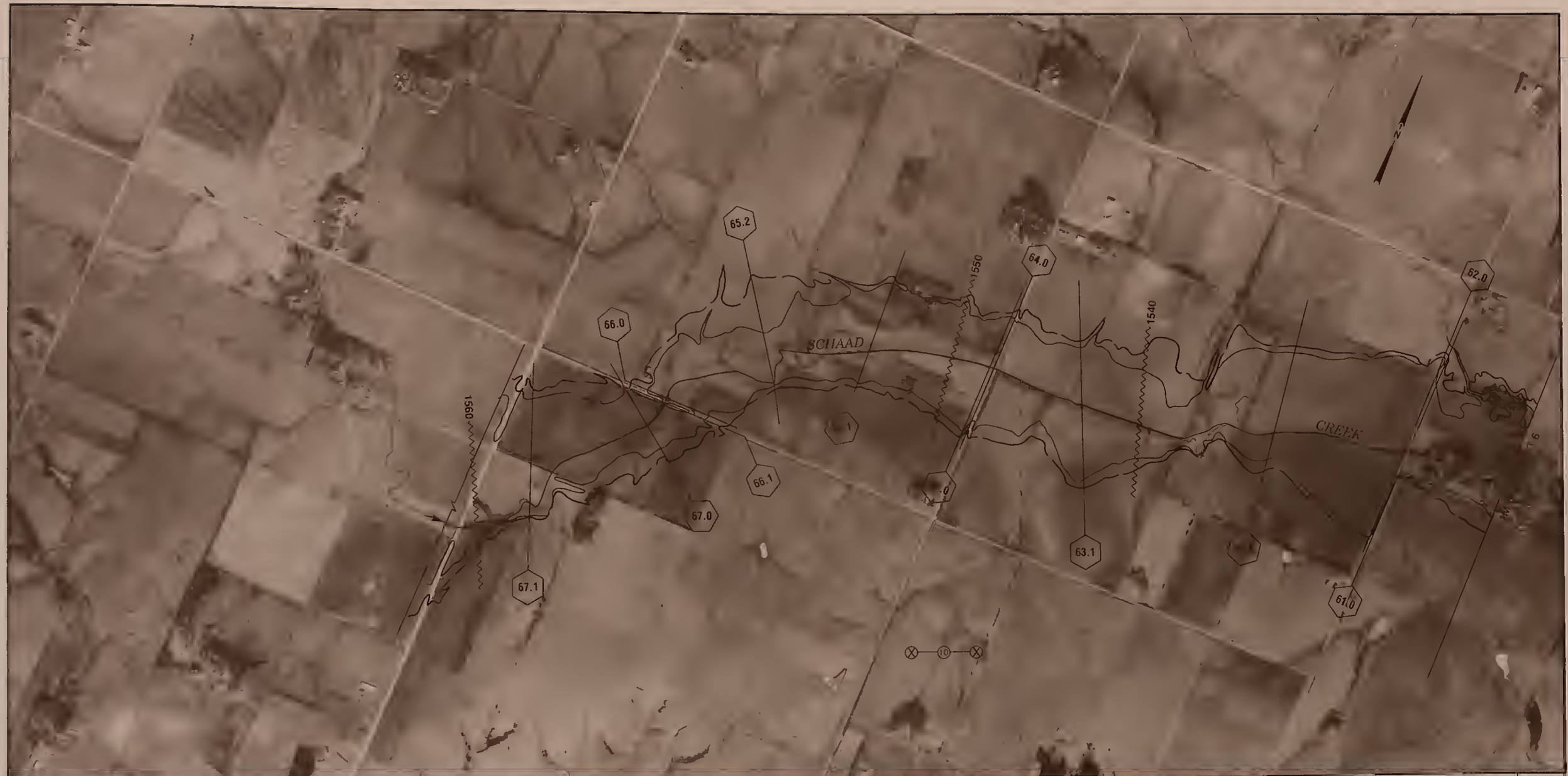

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Nebraska Natural Resources Commission
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SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND

- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- (10) Evaluation Reach
- (20) Cross Section Location
- Limit of Study

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

LOSEKE-TAYLOR CREEKS FLOOD PLAIN MANAGEMENT STUDY

COLFAX & PLATTE COUNTIES, NEBRASKA

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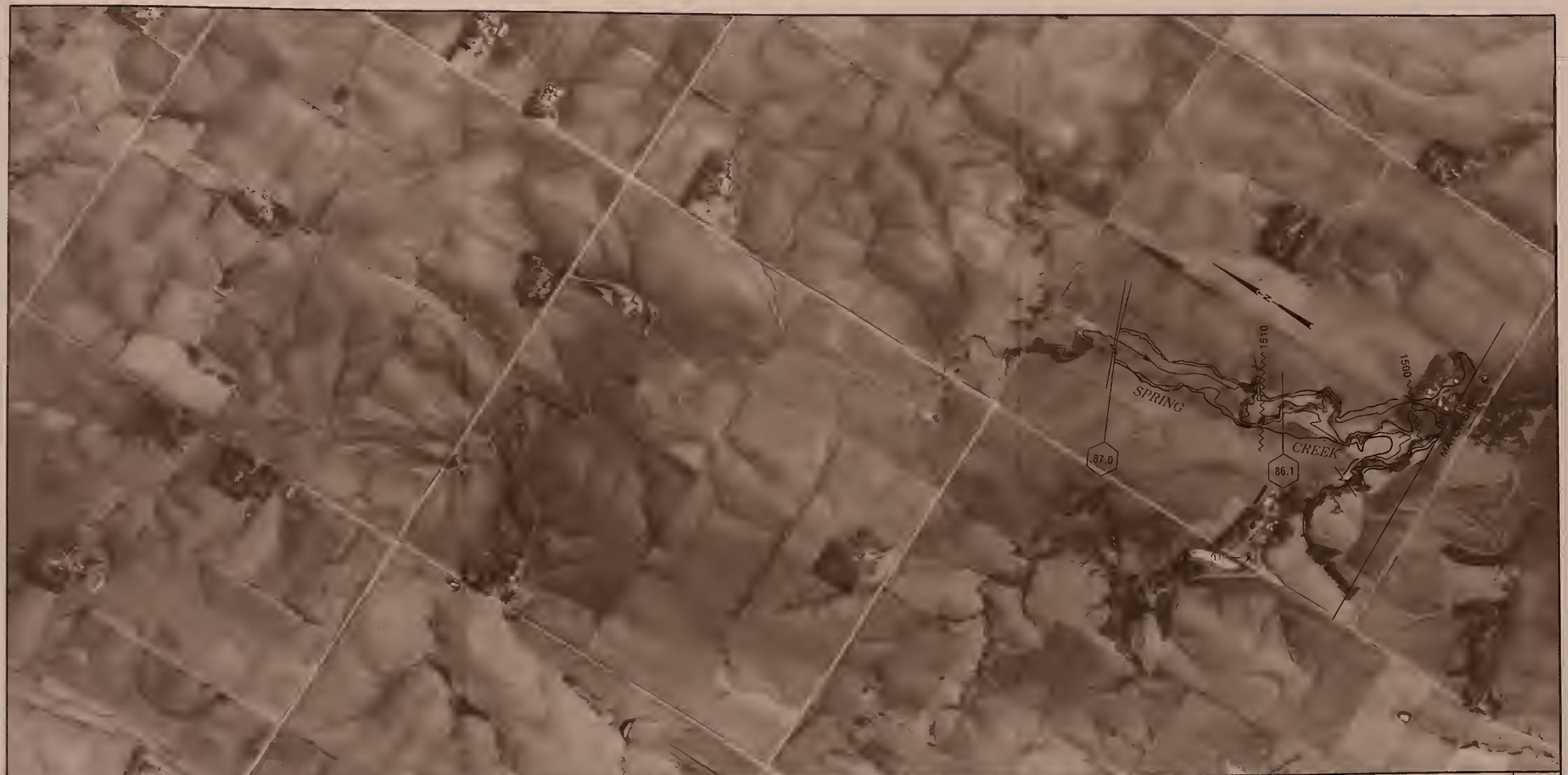

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- 20 Cross Section Location
- Limit of Study

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

LOSEKE-TAYLOR CREEKS FLOOD PLAIN MANAGEMENT STUDY
COLFAX & PLATTE COUNTIES, NEBRASKA

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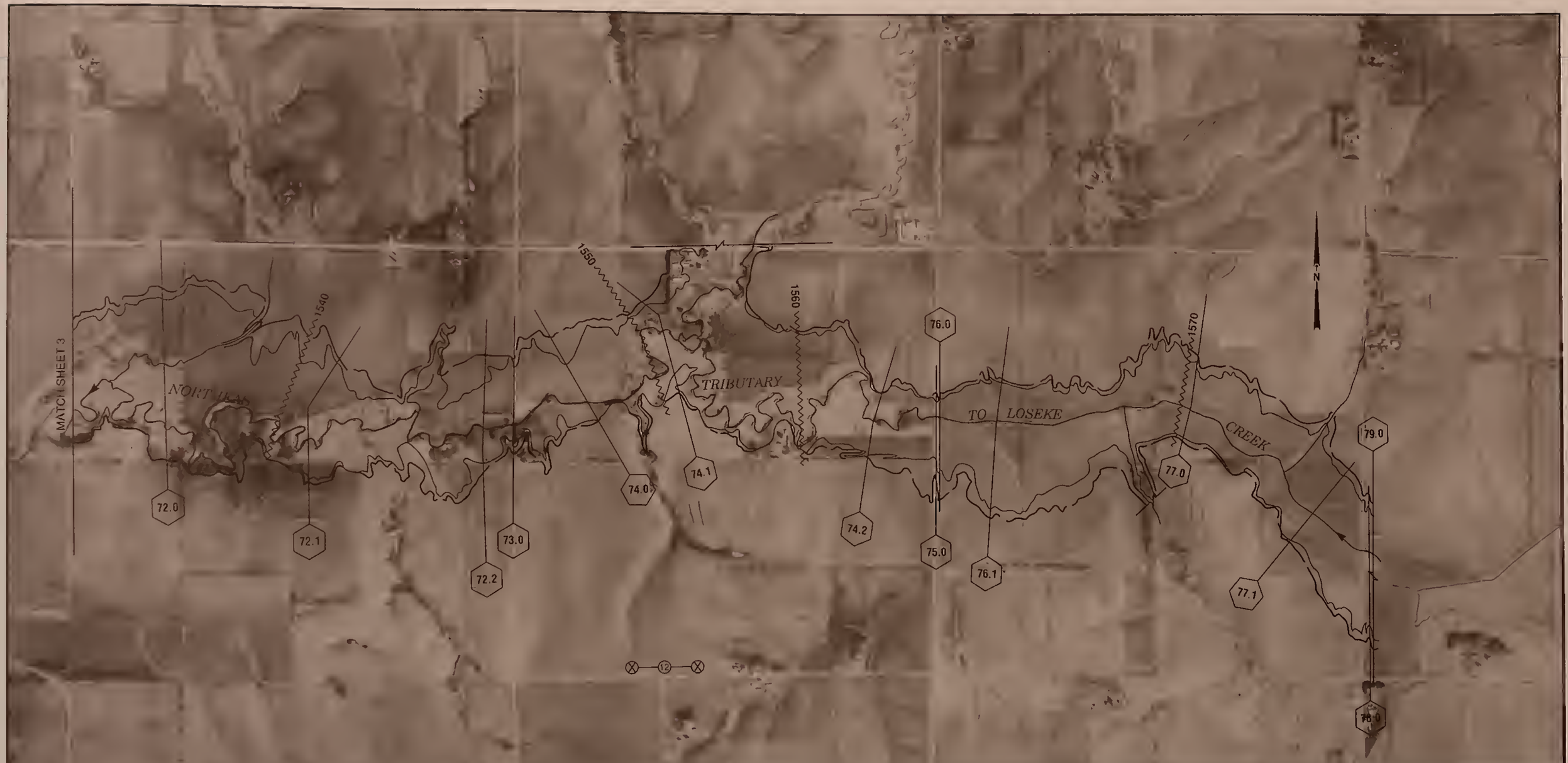

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Nebraska Natural Resources Commission
1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND
- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- (1) Evaluation Reach
- (20) Cross Section Location
- Limit of Study

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

LOSEKE-TAYLOR CREEKS
FLOOD PLAIN MANAGEMENT STUDY
COLFAX & PLATTE COUNTIES, NEBRASKA

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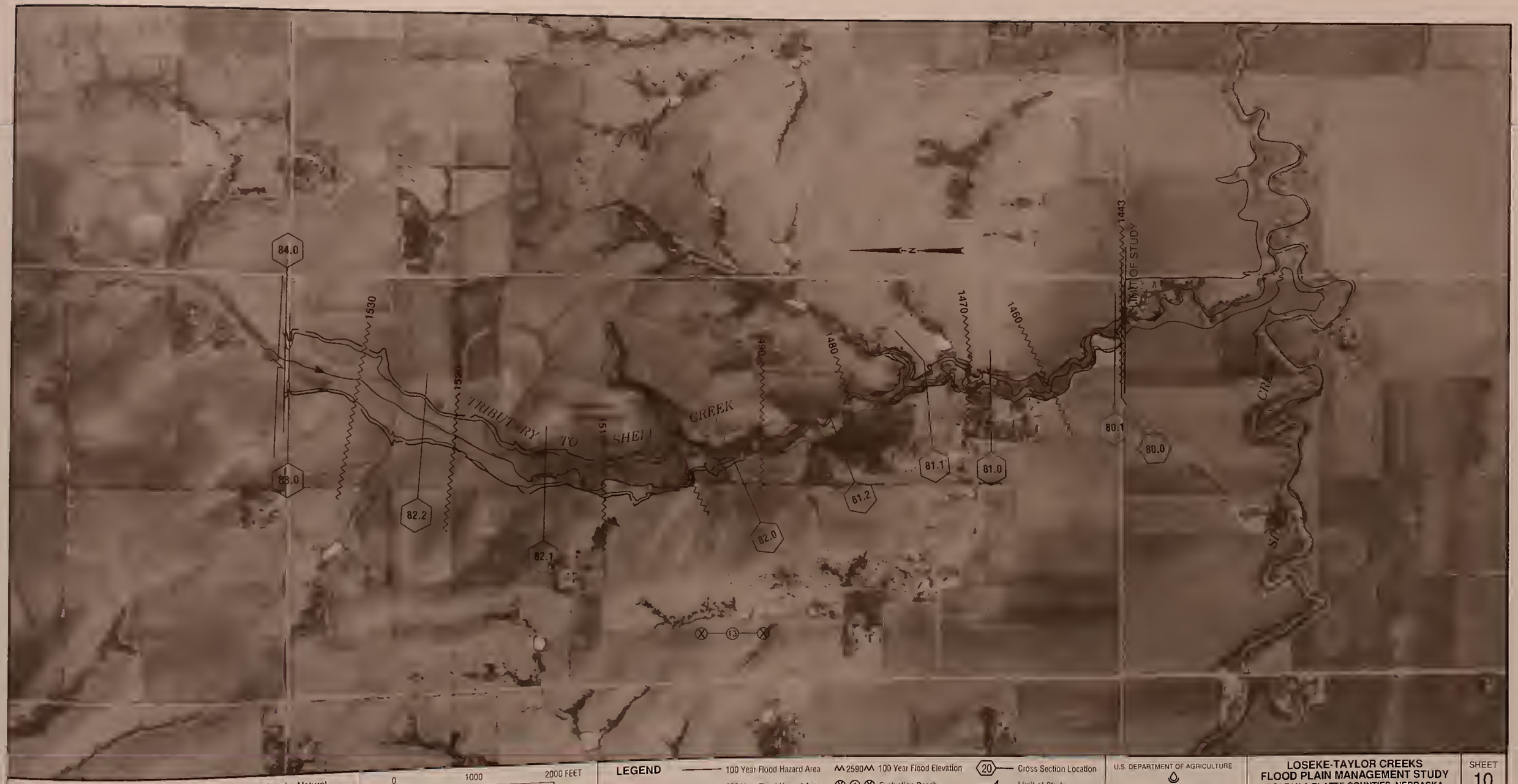

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Nebraska Natural Resources Commission 1988 Photography

SCALE 0 1000 2000 FEET
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LEGEND

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- 500 Year Flood Hazard Area
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- Evaluation Reach
- 20 Cross Section Location
- Limit of Study

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

LOSEKE-TAYLOR CREEKS FLOOD PLAIN MANAGEMENT STUDY

COLFAX & PLATTE COUNTIES, NEBRASKA

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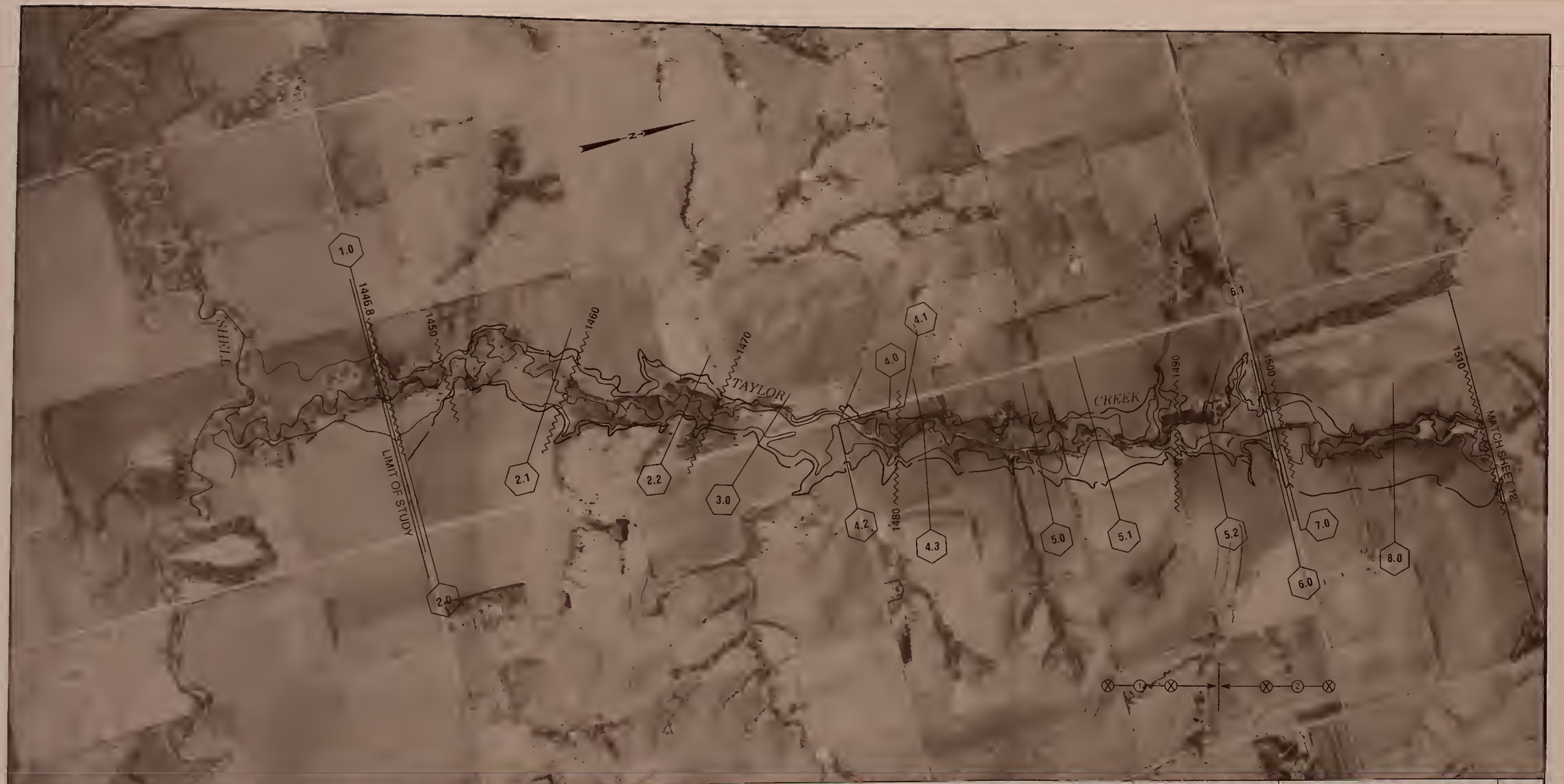

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Nebraska Natural Resources Commission 1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND

- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- Evaluation Reach
- (20) Cross Section Location
- Limit of Study

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

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COLFAX & PLATTE COUNTIES, NEBRASKA

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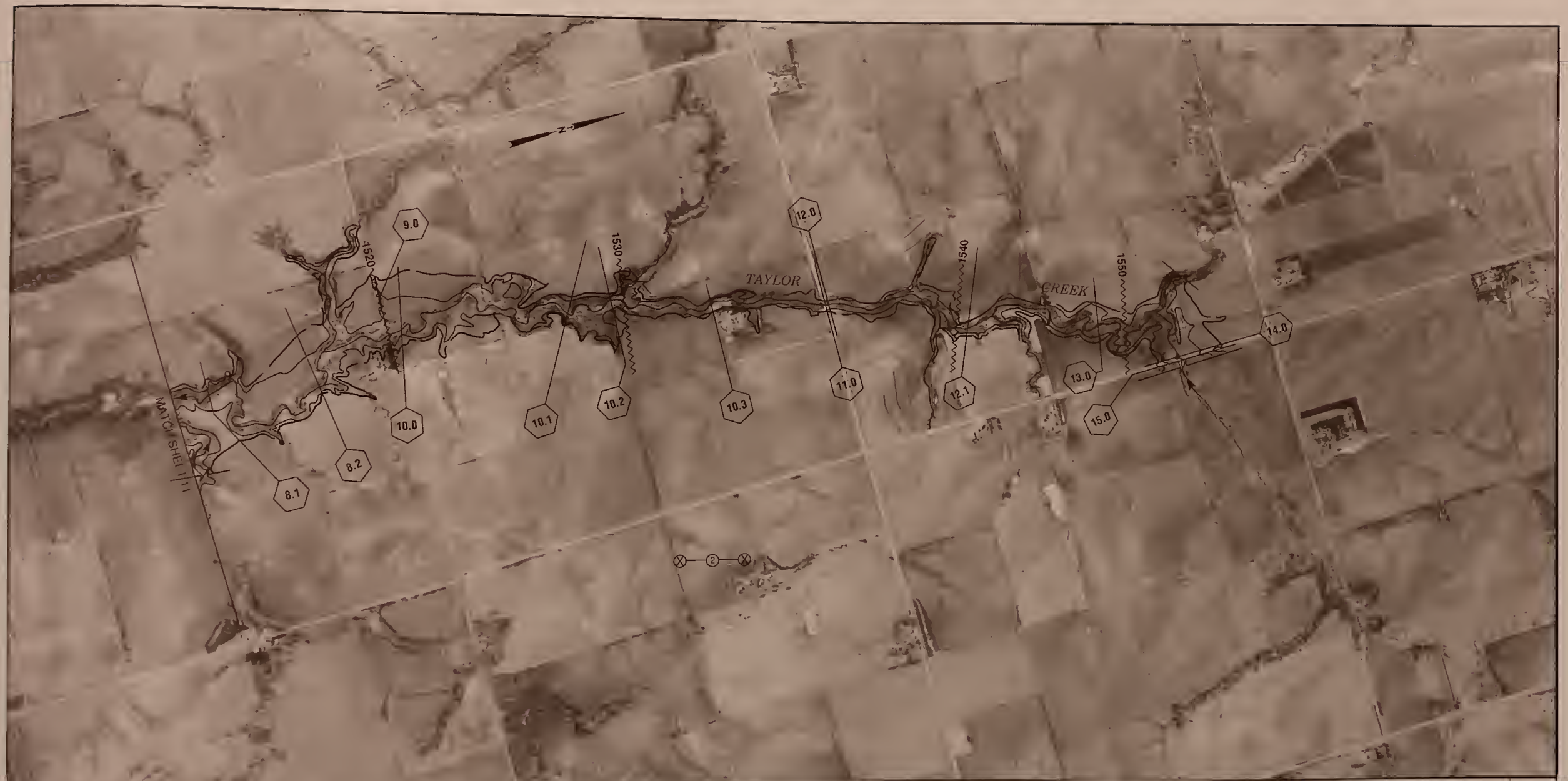

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Nebraska Natural Resources Commission 1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND
- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- Evaluation Reach
- 20 Cross Section Location
- Limit of Study

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

LOSEKE-TAYLOR CREEKS FLOOD PLAIN MANAGEMENT STUDY
COLFAX & PLATTE COUNTIES, NEBRASKA

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APPENDIX B

FLOOD PROFILES

LEGEND

YEAR

500

100

50

10

Channel Bottom

Bridge

Culvert

Low Point in Roadway

M.S.L. ELEVATION

1510
1500
1490
1480
1470
1460
1450
1440
1430
1420
1410

0+00
20+00
40+00
60+00
80+00
100+00
120+00
140+00
160+00
180+00

XS 2.2
XS 2.1
XS 3.0
Rd XS 4.0
XS 4.1
XS 4.2
XS 4.3
XS 5.1
XS 5.0
XS 5.2
Rd XS 1.0
XS 2.0

TAYLOR CREEK
EVALUATION REACH 1

LOSERK - TAYLOR WTSH.
STREAM PROFILE

PLATTE-COLFAX COUNTIES NEBRASKA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

D.W.C.

APPENDIX B

LEGEND

YEAR

500 ——— ———

100 ——— ———

50 ——— – ———

10 ——— – – ———

Channel Bottom

Bridge

Culvert

Low Point in Roadway

1560
1550
1540
1530
1520
151
1500
149
1480
147
1460

XS 14.0
XS 13.0
XS 12.1
XS 11.0
XS 10.3
XS 10.2
XS 10.1
XS 10.0
XS 9.0
XS 8.1
XS 8.0
XS 7.0
XS 6.1
XS 5.2

165+00 180+00 200+00 220+00 240+00 260+00 280+00 300+00 320+00 340+00 360+00 380+00

TAYLOR CREEK

EVALUATION REACH 2

LOSEKE - TAYLOR WTSH
STREAM PROFILE

PLATTE - COLFAX COUNTIES NEBRASKA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Date
Designed
Drawn D.W.C
Traced
Checked
Approved by
Title
Sheet 2 of 11
Drawing No. APPENDIX B

LEGEND

YEAR

500 ——— ———

100 ———

50 — — —

10 — — — —

Channel Bottom

Bridge

Culvert

Low Point in Roadway

M.S.L. ELEVATION

1500
1490
1480
1470
1460
1450
1440

XS 19.0

Rd XS 20.0
XS 21.0

XS 22.0

XS P3.0

220+00 240+00 260+00 280+00 300+00 320+00 340+00 360+00 380+00 400+00 420+00 440+00

EVALUATION REACH 3

4

1480
1470
1460
1450
1440
1430
1420

Rd XS 16.0
XS 17.0

XS 18.0

XS 18.1

XS 18.2

0+00 20+00 40+00 60+00 80+00 100+00 120+00 140+00 160+00 180+00 200+00 220+00

LOSEKE CREEK
EVALUATION REACH 3

LOSEKE - TAYLOR WTSH.
STREAM PROFILE

PLATTE-COLFAX COUNTIES NEBRASKA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Date

D.W.C. 12/82

Sheet 3 of 11

APPENDIX B

LEGEND

YEAR

500 ——— ———

100 ———

50 ——— — ———

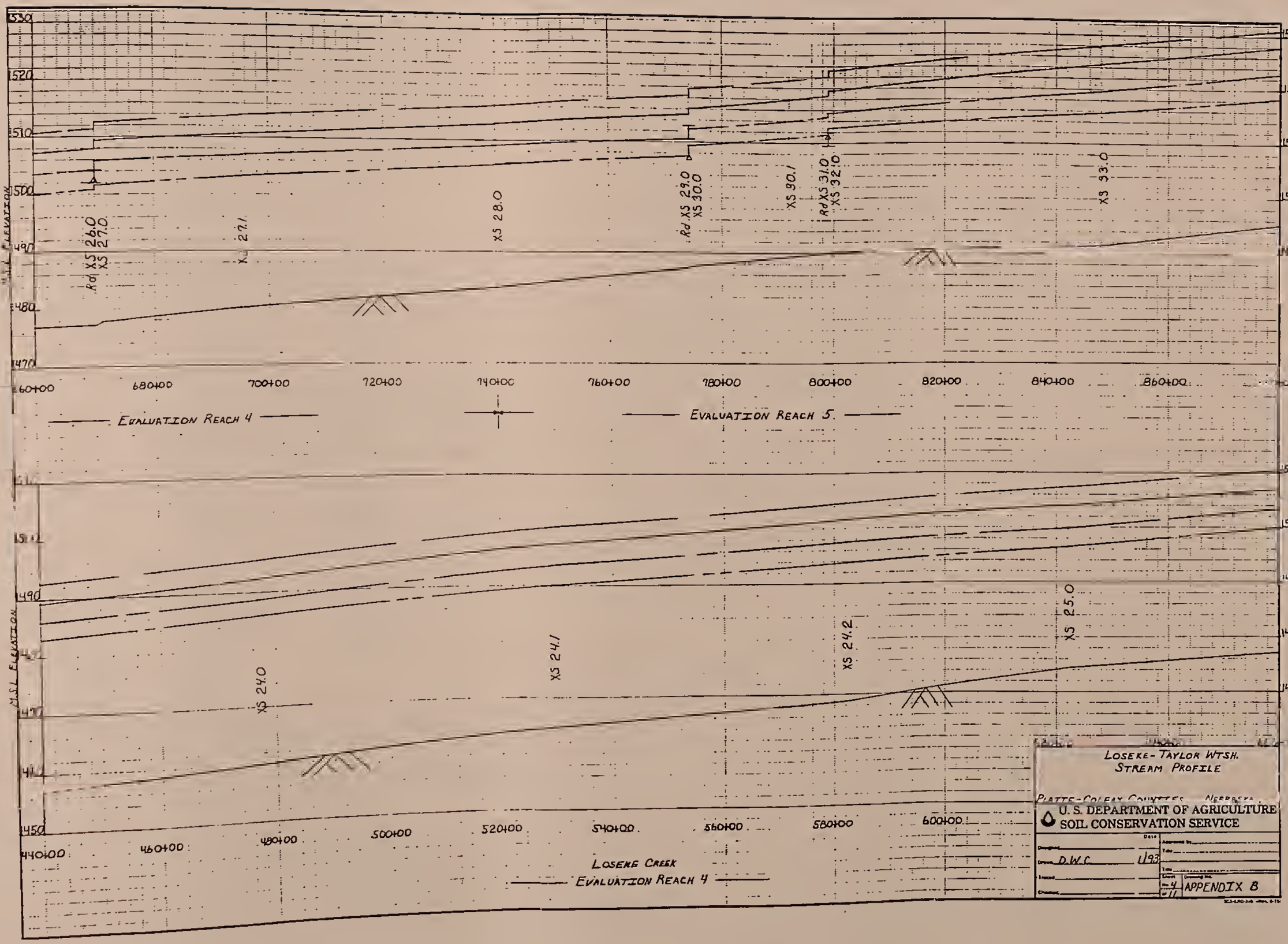
10 ——— — — ———

Channel Bottom

Bridge

Culvert

Low Point in Roadway



LOSEKE-TAYLOR WTSH.
STREAM PROFILE

PLATTE-COLFAX COUNTIES NEBRASKA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

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Title
Sheet No. 4 of 11
Drawing No. APPENDIX B

LEGEND

YEAR

500 ——— ———

100 ———

50 — — —

10 — — —

Channel Bottom

Bridge

Culvert

Low Point in Roadway

1570
1560
1550
1540
1530
1520
1510
1500
1490

M.S.L. ELEVATION

XS 33.1
XS 34.0
XS 34.1
Rd XS 35.0
XS 35.1
XS 36.0
XS 37.0
XS 38.0
Rd XS 39.0
XS 39.1

875+00 880+00 900+00 920+00 940+00 960+00 980+00 1000+00 1020+00 1040+00 1060+00 1080+00

LOSEKE CREEK
EVALUATION REACH 6

(5)

LOSEKE - TAYLOR WTSH.
STREAM PROFILE

PLATTE-COLFAX COUNTIES NEBRASKA
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

D.W.C. 1/91

APPENDIX B

LEGEND

YEAR

500

100

50

10

Channel Bottom

Bridge

Culvert

Low Point in Roadway

ELEVATION

610
600
590
580
570
560
550
540
530
520

XS 45.0
Rd XS 46.0
XS 46.1
XS 46.2
XS 46.3
Rd XS 47.0
XS 48.0

1300+00
1320+00
1340+00
1360+00
1380+00
1400+00
1420+00

EVALUATION REACH 7

XS 39.2
XS 39.3
Rd XS 40.0
XS 41.0
XS 41.1
XS 41.2
XS 41.3
Rd XS 42.0
XS 43.0
XS 43.1
Rd XS 44.1
XS 44.2
XS 44.0
XS 44.3

1100+00
1120+00
1140+00
1160+00
1180+00
1200+00
1220+00
1240+00
1260+00
1280+00
1300+00

LOSERE CREEK

EVALUATION REACH 6

EVALUATION REACH 7

LOSEKE-TAYLOR WTSH.
STREAM PROFILE

PLATTE-COLFAX COUNTIES NEBRASKA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

D.W.C 1/93

APPENDIX B

LEGEND

YEAR

500 ——— ———

100 ———

50 — — —

10 — — —

Channel Bottom

Bridge

Culvert

Low Point in Roadway

M.S.L. ELEVATION

1540
1530
1520
1510
1500
1490
1480
1470
1460

XS 59.0
Rd XS 57.0
XS 54.1
Rd XS 53.0
XS 56.0
XS 56.1
XS 57.0
XS 58.0
Rd XS 59.0
XS 59.1
XS 60.0

540+00 560+00 580+00 600+00 620+00 640+00 660+00 680+00 700+00 720+00

EVALUATION REACH 9 — EVALUATION REACH 10

1510
1500
1490
1480
1470
1460
1450

XS 23.0
Rd XS. 49.0
XS 50.0
XS 51.0
XS 51.1
XS 51.2
XS 52.0

460+00 380+00 400+00 420+00 440+00 460+00 480+00 500+00 520+00

SCHAAD CREEK

EVALUATION REACH 8 — EVALUATION REACH 9

③

LOSEKE-TAYLOR WTSR
STREAM PROFILE

PLATTE-COLFAX COUNTIES, NEBRASKA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

D.W.C.

APPENDIX B

LEGEND

YEAR

500

100

50

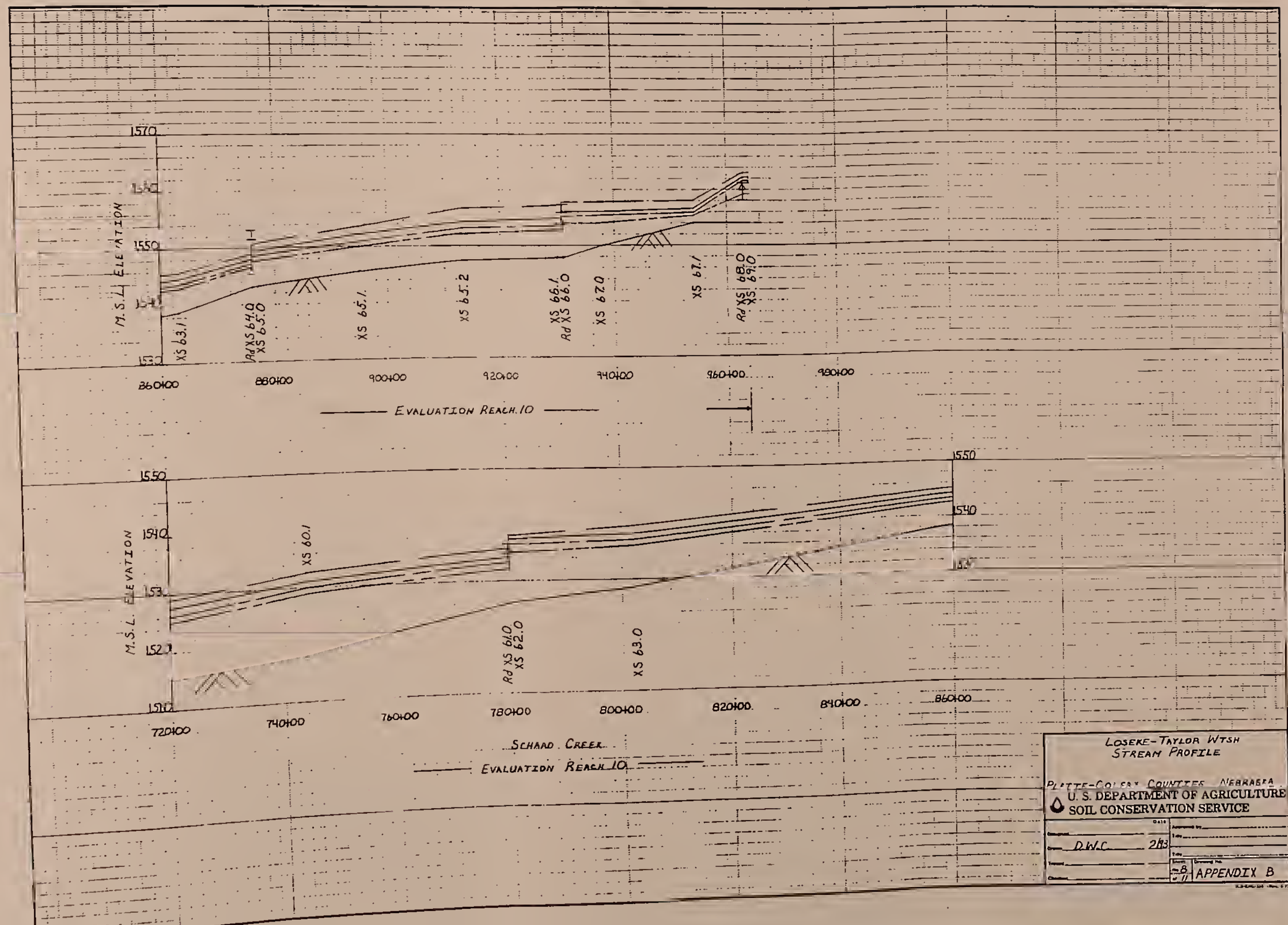
10

Channel Bottom

Bridge

Culvert

Low Point in Roadway



LOSEKE-TAYLOR WTSH
STREAM PROFILE

PLATTE-COLFAX COUNTIES NEBRASKA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Date
Designed
Drawn D.W.C 2/83
Traced
Checked
Approved by
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Title
Drawing No. 8 of 11
APPENDIX B

LEGEND

YEAR

500 ——— ———

100 ———————

50 — — — —

10 — — — —

Channel Bottom

Bridge

Culvert

Low Point in Roadway

1530
1520
1510
1500
1490
1480
1470
1460
1450

M.S.L. ELEVATION

XS 51.1

RD XS 85.0
XS 86.0

XS 86.1

XS 87.0

420+00 440+00 460+00 480+00 500+00 520+00 540+00 560+00 580+00

SPRING CREEK
(TRIBUTARY TO SHADD CREEK)

EVALUATION REACH II

LOSEKE-TAYLOR WTSH
STREAM PROFILE

PLATTE-COLFAX COUNTIES NEBRASKA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Drawn D.W.C 1/93

APPENDIX B

LEGEND

YEAR

500 ——— ———

100 ———————

50 —— — ——

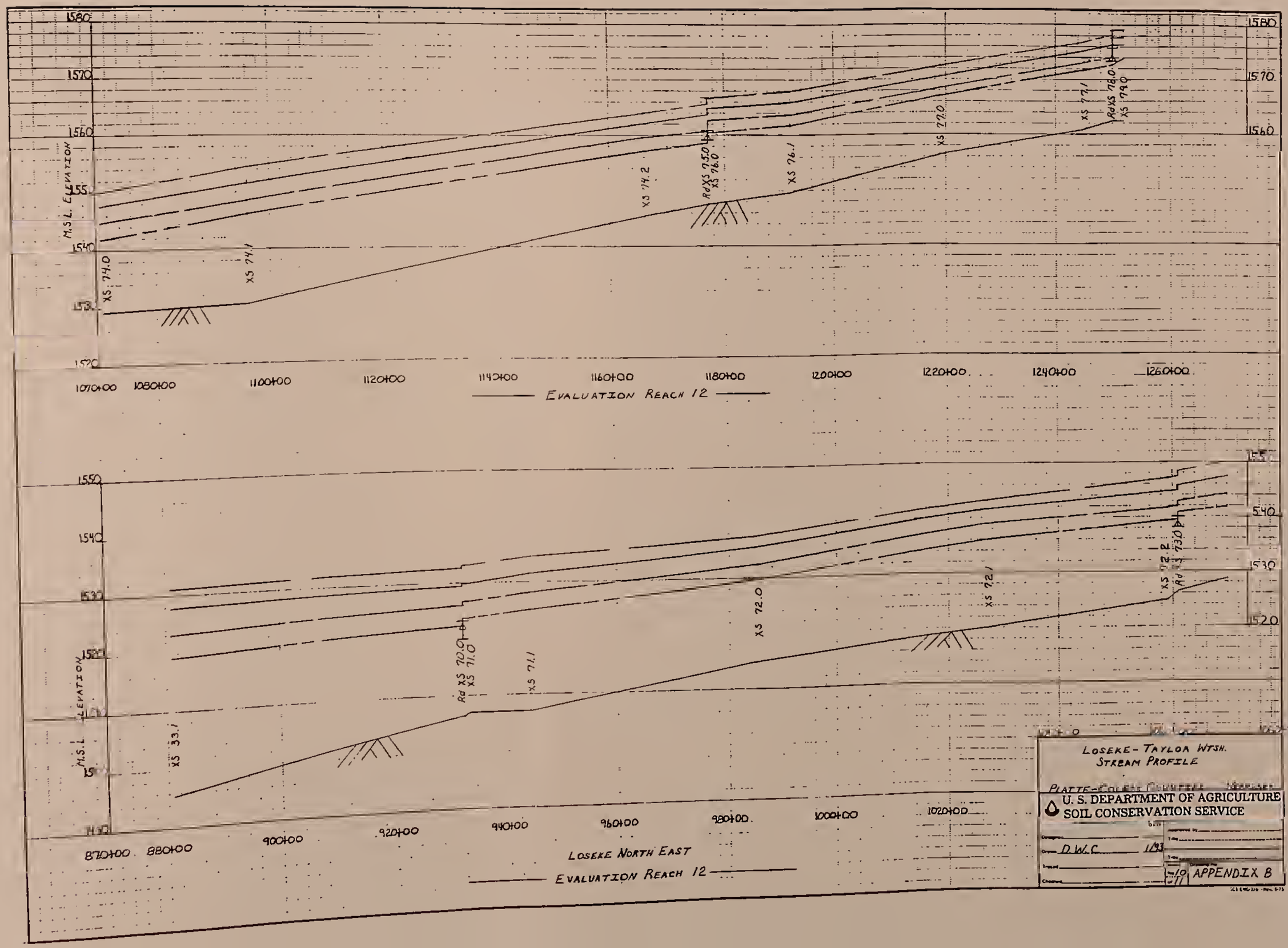
10 —— — — —

Channel Bottom

Bridge

Culvert

Low Point in Roadway



LOSEKE - TAYLOR WTSH.
STREAM PROFILE

PLATTE-COLFAX COUNTIES NEBRASKA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Drawn D.W.C. 1/83

Traced

Checked

10/11 APPENDIX B

LEGEND

YEAR

500

100

50

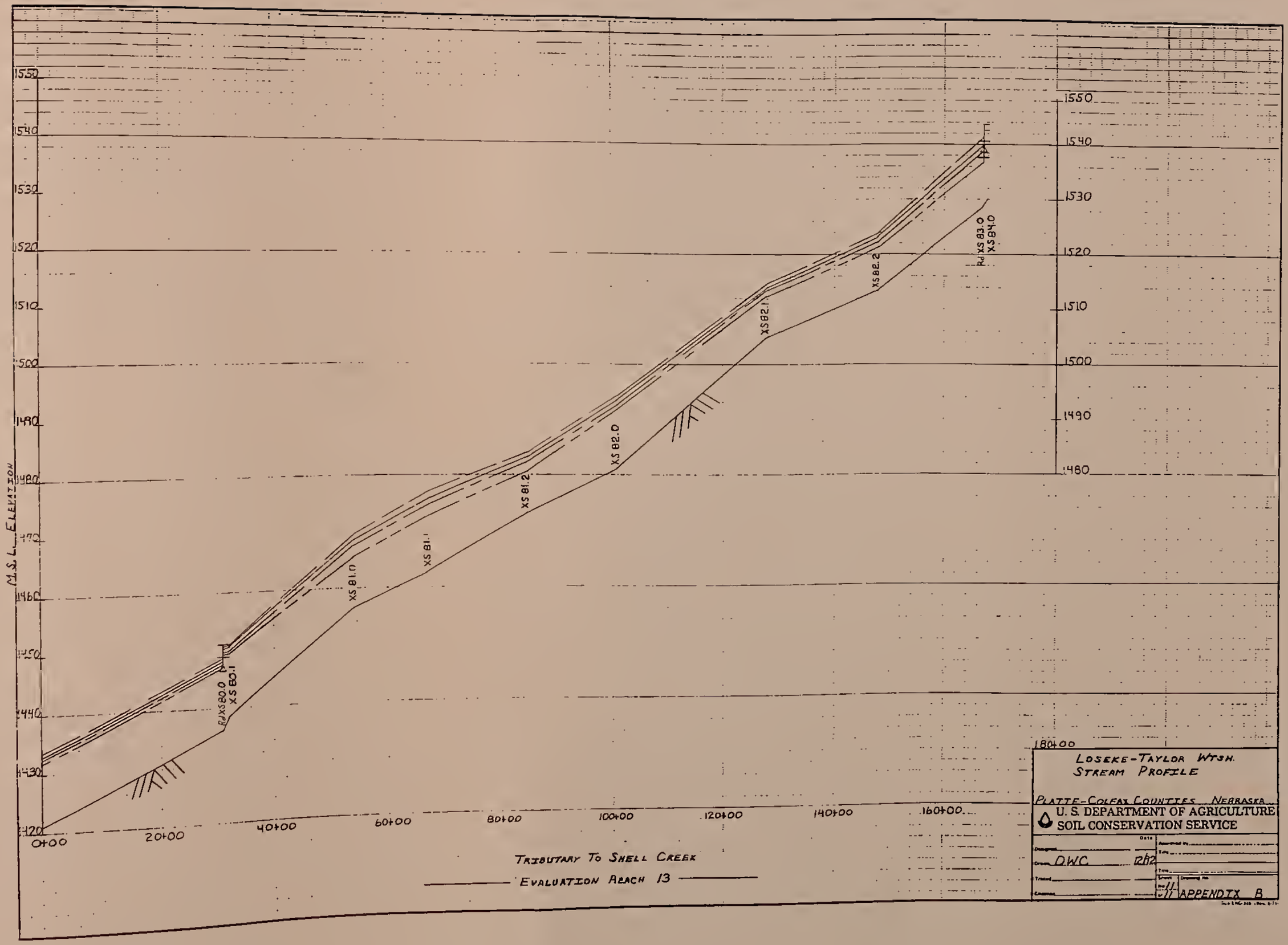
10

Channel Bottom

Bridge

Culvert

Low Point in Roadway



LOSEKE-TAYLOR WTSH.
STREAM PROFILE

PLATTE-COLFAX COUNTIES, NEBRASKA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Drawn DWC 2/82

Sheet No. 11 of 11

APPENDIX B

APPENDIX C

TECHNICAL TABLES

LOSEKE-TAYLOR CREEKS WATERSHED

CROSS SECTION NUMBER	10 YEAR FREQUENCY DISCHARGE C.F.S.	10 YEAR FREQUENCY ELEVATION M.S.L.	50 YEAR FREQUENCY DISCHARGE C.F.S.	50 YEAR FREQUENCY ELEVATION M.S.L.	100 YEAR FREQUENCY DISCHARGE C.F.S.	100 YEAR FREQUENCY ELEVATION M.S.L.	500 YEAR FREQUENCY DISCHARGE C.F.S.	500 YEAR FREQUENCY ELEVATION M.S.L.
TAYLOR CREEK								
1.0 Downstream	4374	1441.3	9435	1445.3	12412	1446.2	21823	1447.7
1.0 Upstream	4374	1443.0	9435	1446.1	12412	1446.8	21823	1448.2
2.0	4374	1443.1	9435	1446.2	12412	1446.9	21823	1448.3
2.1	4517	1454.5	9808	1458.2	12861	1459.3	22305	1461.6
2.2	4501	1463.6	9847	1467.5	12930	1468.8	22456	1471.7
3.0	4501	1467.0	9847	1470.9	12930	1472.2	22456	1475.2
4.0 Downstream	4501	1469.6	9847	1475.2	12930	1475.5	22456	1478.5
4.0 Upstream	4501	1473.5	9847	1475.2	12930	1476.2	22456	1479.1
4.1	4501	1473.7	9847	1475.2	12930	1476.2	22456	1479.1
4.2	4501	1474.3	9847	1476.3	12930	1477.4	22456	1480.2
4.3	4461	1476.3	9783	1479.4	12854	1480.7	22342	1483.6
5.1	4461	1481.0	9783	1484.5	12854	1485.9	22342	1488.9
5.0	4455	1484.5	9772	1489.1	12834	1490.7	22291	1493.7
5.2	4383	1488.4	9625	1493.4	12648	1495.0	21987	1498.3
6.0	4274	1490.0	9431	1494.8	12413	1496.5	21647	1499.9
6.1 Downstream	4274	1490.2	9431	1495.2	12413	1496.9	21647	1500.6
6.1 Upstream	4274	1490.2	9431	1498.1	12413	1500.5	21647	1503.1
7.0	4274	1490.4	9431	1498.2	12413	1500.5	21647	1503.2
8.0	4274	1497.6	9431	1504.1	12413	1506.4	21647	1510.8
8.1	3220	1503.7	7119	1509.2	9366	1511.3	16321	1516.4
8.2	3220	1510.3	7119	1515.1	9366	1516.8	16321	1520.5
9.0 Downstream	2725	1512.3	6058	1517.8	7970	1520.0	13881	1525.0
9.0 Upstream	2725	1512.6	6058	1521.0	7970	1523.0	13881	1525.8
10.0	2725	1512.8	6058	1521.1	7970	1523.2	13881	1526.2
10.1	2725	1519.3	6058	1524.4	7970	1526.3	13881	1529.6
10.2	2725	1523.0	6058	1527.7	7970	1529.6	13881	1533.0
10.3	1950	1524.9	4328	1529.8	5699	1531.9	10019	1535.6
11.0 Downstream	1950	1529.2	4328	1533.8	5699	1535.8	10019	1539.7
11.0 Upstream	1950	1529.2	4328	1533.8	5699	1535.8	10019	1539.7
12.0	1950	1529.3	4328	1534.0	5699	1536.0	10019	1539.8
12.1	1948	1535.4	4321	1539.8	5690	1540.5	9999	1544.3
13.0	1831	1542.5	4056	1544.4	5337	1547.7	9371	1550.3
14.0	1389	1549.8	3052	1554.3	4013	1556.2	7029	1560.9
15.0 Downstream	1389	1550.0	3052	1554.6	4013	1556.5	7029	1561.2
15.0 Upstream	1389	1550.1	3052	1557.4	4013	1559.1	7029	1561.8
LOSEKE CREEK								
16.0 Downstream	11247	1449.6	23465	1451.7	51620	1454.3	88997	1456.6
16.0 Upstream	11247	1450.5	23465	1452.1	51820	1454.7	88997	1457.1
17.0	11247	1450.6	23465	1452.3	51820	1454.8	88997	1457.3
18.0	11514	1459.9	24073	1462.3	53165	1465.0	90700	1467.3
18.1	11514	1462.6	24073	1465.4	53165	1468.6	90700	1471.3
18.2	11489	1466.6	24045	1467.5	53110	1473.2	90639	1476.1
19.0	11489	1471.0	24045	1474.4	53110	1478.3	90639	1481.5
20.0 Downstream	11559	1474.6	24359	1477.5	53845	1481.4	91725	1484.7
20.0 Upstream	11559	1475.9	24359	1478.5	53845	1482.1	91725	1485.6
21.0	11559	1475.9	24359	1478.5	53845	1482.2	91725	1485.7
22.0	11559	1476.6	24359	1479.4	53845	1483.2	91725	1486.8
23.0	11559	1478.4	24359	1481.0	53645	1484.8	91725	1488.3
24.0	9974	1485.9	20692	1488.7	45317	1492.3	74516	1495.4
24.1	9974	1490.0	20692	1493.6	45317	1497.4	74516	1500.6
24.2	9974	1493.9	20692	1497.4	45317	1501.4	74516	1504.7
25.0	10201	1496.4	21182	1499.8	46287	1504.0	75810	1507.5
26.0 Downstream	10319	1500.9	21407	1504.1	46743	1508.1	76435	1511.4
26.0 Upstream	10319	1501.6	21407	1505.8	46743	1509.2	76435	1512.5
27.0	10319	1501.6	21407	1505.8	46743	1509.2	76435	1512.5
27.1	10319	1503.2	21407	1507.0	46743	1510.7	76435	1514.0
28.0	10327	1505.7	21439	1509.1	46786	1513.1	76451	1516.5
29.0 Downstream	10327	1507.6	21439	1510.8	46786	1514.9	76451	1518.5
29.0 Upstream	10327	1509.5	21439	1512.3	46786	1516.0	76451	1519.5
30.0	10327	1509.5	21439	1512.3	46786	1516.1	76451	1519.5
30.1	10440	1510.9	21630	1514.0	47140	1517.9	76876	1521.4
31.0 Downstream	10440	1511.7	21630	1514.8	47140	1518.9	76876	1522.3
31.0 Upstream	10440	1512.8	21630	1515.4	47140	1519.5	76876	1523.1
32.0	10440	1512.9	21630	1515.5	47140	1519.6	76876	1523.1
33.0	10343	1515.8	21472	1519.4	46807	1524.3	76348	1528.0
33.1	10343	1518.9	21472	1522.9	46807	1527.7	76348	1531.1
34.0	6698	1523.7	13121	1526.8	28320	1530.7	45937	1533.8
34.1	6698	1525.0	13121	1528.3	28320	1532.3	45937	1535.2
35.0 Downstream	6698	1526.5	13121	1529.8	28320	1534.0	45937	1536.6
35.0 Upstream	6698	1526.9	13121	1530.3	28320	1534.6	45937	1537.3
35.1	6698	1526.9	13121	1530.3	28320	1534.7	45937	1537.3
36.0	5896	1530.1	11522	1533.5	24796	1537.7	39613	1540.2
37.0	5896	1536.2	11522	1538.9	24796	1543.0	39613	1545.4
38.0	5896	1538.8	11522	1541.5	24796	1545.2	39613	1547.8
39.0 Downstream	5896	1538.9	11522	1541.6	24796	1545.3	39613	1547.8
39.0 Upstream	5896	1539.5	11522	1542.3	24796	1546.0	39613	1548.6
39.1	5993	1541.2	11723	1544.2	25260	1548.1	40332	1550.7
39.2	5993	1546.2	11723	1548.8	25260	1552.7	40332	1554.6
39.3	5993	1549.7	11723	1552.2	25260	1555.9	40332	1557.8

Note: Floodway Elevation is 1.0' above the 100 Year Flood Elev

LOSEKE-TAYLOR CREEKS WATERSHED

CROSS SECTION NUMBER	10 YEAR FREQUENCY DISCHARGE C.F.S.	10 YEAR FREQUENCY ELEVATION M.S.L.	50 YEAR FREQUENCY DISCHARGE C.F.S.	50 YEAR FREQUENCY ELEVATION M.S.L.	100 YEAR FREQUENCY DISCHARGE C.F.S.	100 YEAR FREQUENCY ELEVATION M.S.L.	500 YEAR FREQUENCY DISCHARGE C.F.S.	500 YEAR FREQUENCY ELEVATION M.S.L.
40.0 Downstream	5993	1549.8	11723	1552.2	25260	1555.9	40332	1557.6
40.0 Upstream	5993	1550.6	11723	1555.8	25260	1559.6	40332	1561.7
41.0	5993	1550.7	11723	1555.9	25260	1559.9	40332	1562.4
41.1	4025	1552.1	7642	1557.1	16446	1562.0	26377	1564.9
41.2	4025	1553.4	7642	1557.5	16446	1562.3	26377	1565.2
41.3	3140	1557.1	5684	1559.5	11865	1563.6	18079	1566.5
42.0 Downstream	3140	1560.4	5684	1562.1	11865	1565.7	18079	1568.5
42.0 Upstream	3140	1561.2	5684	1564.2	11865	1567.7	18079	1569.5
43.0	3157	1561.3	5684	1564.3	11846	1568.1	17978	1570.2
43.1	3157	1561.4	5684	1564.6	11846	1568.3	17978	1570.4
44.1 Downstream	3157	1563.0	5684	1566.1	11846	1571.2	17978	1573.3
44.1 Upstream	3157	1563.0	5684	1568.5	11846	1571.6	17978	1575.6
44.2	3157	1563.3	5684	1568.7	11846	1572.0	17978	1576.0
44.0	3157	1568.8	5684	1571.7	11846	1574.4	17978	1577.2
44.3	2415	1572.7	4382	1574.9	9214	1577.2	14622	1579.1
45.0	2415	1577.1	4382	1579.3	9214	1581.5	14622	1583.0
46.0 Downstream	2415	1577.2	4382	1579.4	9214	1581.6	14622	1583.1
46.0 Upstream	2415	1578.5	4382	1580.0	9214	1582.1	14622	1583.7
46.1	2442	1579.2	4424	1580.9	9281	1583.2	14771	1584.8
46.2	2442	1583.9	4424	1585.2	9281	1587.5	14771	1589.2
46.3	2540	1589.1	4377	1590.4	9034	1592.2	14196	1593.3
47.0 Downstream	2540	1590.3	4377	1591.4	9034	1593.2	14196	1594.2
47.0 Upstream	2540	1591.7	4377	1592.6	9034	1594.0	14196	1595.0
48.0	2540	1591.7	4377	1592.7	9034	1594.1	14196	1595.1
SCHAAD CREEK								
49.0 Downstream	3252	1479.3	6276	1482.0	13537	1485.7	23030	1489.4
49.0 Upstream	3252	1479.4	6276	1482.5	13537	1486.0	23030	1489.7
50.0	3252	1479.4	6276	1482.6	13537	1486.0	23030	1489.7
51.0	3252	1479.7	6276	1482.9	13537	1486.3	23030	1490.0
51.1	3252	1481.3	6276	1484.2	13537	1487.7	23030	1491.1
51.2	3252	1485.6	6276	1488.4	13537	1492.2	23030	1495.4
52.0	2200	1494.2	4299	1496.6	9497	1499.9	17808	1502.6
53.0	2200	1495.8	4299	1498.1	9497	1501.3	17808	1504.5
54.0 Downstream	2200	1496.0	4299	1498.2	9497	1501.5	17808	1504.7
54.0 Upstream	2200	1496.3	4299	1500.7	9497	1503.3	17808	1505.8
54.1	2186	1498.9	4279	1502.0	9468	1504.8	17870	1507.6
55.0 Downstream	2186	1503.6	4279	1505.7	9468	1508.4	17870	1510.8
55.0 Upstream	2186	1504.9	4279	1508.2	9468	1510.0	17870	1511.7
56.0	2186	1505.2	4279	1508.4	9468	1510.3	17870	1512.2
56.1	2074	1510.3	4086	1512.1	9047	1513.6	17121	1515.5
57.0	2114	1515.1	4210	1516.2	9321	1517.5	17725	1518.9
58.0	2114	1515.9	4210	1517.2	9321	1518.8	17725	1520.4
59.0 Downstream	2114	1516.0	4210	1517.3	9321	1519.0	17725	1520.6
59.0 Upstream	2114	1518.0	4210	1518.9	9321	1520.4	17725	1521.7
59.1	2143	1518.2	4275	1519.2	9458	1520.8	17959	1522.3
60.0	1657	1524.7	3377	1525.7	7391	1527.1	13478	1528.6
60.1	1657	1528.9	3377	1530.0	7391	1531.1	13478	1532.4
61.0 Downstream	1657	1532.1	3377	1533.2	7391	1534.3	13478	1535.5
61.0 Upstream	1657	1535.0	3377	1536.4	7391	1537.3	13478	1538.1
62.0	1657	1535.0	3377	1536.4	7391	1537.3	13478	1538.1
63.0	1140	1536.0	2286	1537.1	4990	1538.3	9699	1539.4
63.1	1140	1542.9	2286	1543.5	4990	1544.4	9699	1545.5
64.0 Downstream	1103	1546.6	2199	1547.1	4799	1547.9	9095	1548.8
64.0 Upstream	1103	1547.7	2199	1548.4	4799	1549.4	9095	1550.4
65.0	1103	1547.8	2199	1548.5	4799	1549.5	9095	1550.7
65.1	1103	1549.9	2199	1550.8	4799	1552.1	9095	1553.4
65.2	1103	1552.2	2199	1553.1	4799	1554.3	9095	1556.7
66.1	383	1552.8	770	1553.5	1705	1554.8	5787	1557.2
66.0 Downstream	383	1552.8	770	1553.6	1705	1554.8	5787	1557.2
66.0 Upstream	388	1554.0	770	1555.2	1705	1556.0	5787	1557.6
67.0	388	1554.0	770	1555.3	1705	1556.1	5787	1557.7
67.1	388	1556.2	770	1556.6	1705	1557.4	5787	1559.0
68.0 Downstream	571	1558.7	1134	1559.9	2454	1562.0	5793	1567.5
68.0 Upstream	571	1561.0	1134	1561.9	2454	1562.4	5793	1567.6
69.0	571	1561.0	1134	1561.9	2454	1562.4	5793	1567.6
LOSEKE NORTH EAST								
70.0 Downstream	3847	1522.3	8574	1526.0	19005	1529.4	31143	1532.5
70.0 Upstream	3847	1523.7	8574	1526.5	19005	1529.7	31143	1532.8
71.0	3847	1523.7	8574	1526.4	19005	1529.7	31143	1532.8
71.1	2847	1525.0	8574	1528.0	19005	1531.4	31143	1534.4
72.0	3827	1529.5	6642	1532.5	19388	1535.5	32001	1537.5
72.1	3827	1536.0	8642	1539.0	19388	1541.5	32001	1543.1
72.2	3827	1539.1	8642	1541.8	19388	1544.7	32001	1547.1
73.0 Downstream	3409	1539.3	7899	1542.0	18226	1544.9	31122	1547.3
73.0 Upstream	3409	1540.8	7899	1542.9	18226	1545.7	31122	1548.2
74.0	3409	1541.9	7899	1544.2	18226	1547.5	31122	1550.2
74.1	3409	1546.2	7899	1548.5	18226	1551.8	31122	1554.5
74.2	2522	1557.3	5244	1559.6	11625	1562.1	19938	1564.0
75.0 Downstream	2522	1553.7	5244	1560.9	11625	1563.7	19938	1565.8

Note: Floodway Elevation is 1.0' above the 100 Year Flood Elev

LOSEKE-TAYLOR CREEKS WATERSHED

CROSS SECTION NUMBER	10 YEAR FREQUENCY DISCHARGE C.F.S.	10 YEAR FREQUENCY ELEVATION M.S.L.	50 YEAR FREQUENCY DISCHARGE C.F.S.	50 YEAR FREQUENCY ELEVATION M.S.L.	100 YEAR FREQUENCY DISCHARGE C.F.S.	100 YEAR FREQUENCY ELEVATION M.S.L.	500 YEAR FREQUENCY DISCHARGE C.F.S.	500 YEAR FREQUENCY ELEVATION M.S.L.
75.0 Upstream	2582	1560.7	5244	1562.7	11625	1564.6	19938	1566.6
76.0	2582	1560.7	5244	1562.8	11625	1564.9	19938	1566.8
76.1	2582	1561.6	5244	1563.6	11625	1565.9	19938	1567.9
77.0	2582	1567.1	5244	1568.5	11625	1570.6	19938	1572.8
77.1	3196	1571.6	6435	1573.0	13980	1575.2	22592	1577.0
78.0 Downstream	3196	1572.7	6435	1574.1	13980	1576.3	22592	1578.1
78.0 Upstream	3196	1572.7	6435	1576.8	13980.0	1577.6	22592	1579.0
79.0	3196	1574.0	6435	1576.4	13980	1577.8	22592	1579.8
SHELL CREEK TRIB.								
80.0 Downstream	2150	1446.9	4149	1447.6	5601	1448.1	8401	1448.6
80.0 Upstream	2150	1449.1	4149	1449.5	5601	1450.0	8401	1450.4
80.1	2150	1449.3	4149	1449.9	5601	1450.3	8401	1450.8
81.0	2343	1465.6	4042	1467.3	5623	1468.3	7643	1469.5
81.1	1930	1472.8	3271	1474.6	4518	1475.6	6089	1476.9
81.2	1930	1480.8	3271	1482.3	4518	1483.2	6089	1484.1
82.0	1835	1491.1	3120	1492.6	4325	1493.5	5867	1494.6
82.1	1835	1512.3	3120	1513.4	4325	1514.0	5867	1514.7
82.2	1835	1521.1	3120	1522.2	4325	1522.9	5867	1523.8
83.0 Downstream	1521	1536.3	2536	1538.2	3512	1539.6	4762	1541.4
83.0 Upstream	1521	1538.2	2536	1540.7	3512	1541.7	4762	1542.7
84.0	1521	1538.2	2536	1540.7	3512	1541.8	4762	1542.8
SPRING CREEK								
85.0 Downstream	1409	1490.5	2665	1492.6	5622	1495.3	8400	1497.1
85.0 Upstream	1409	1490.5	2665	1493.0	5622	1497.5	8400	1501.4
86.0	1409	1490.6	2665	1493.1	5622	1497.7	8400	1501.7
86.1	1325	1502.5	2666	1505.0	5785	1508.1	9327	1511.1
87.0	1330	1516.2	2667	1517.8	5783	1519.9	9337	1521.6

Note: Floodway Elevation is 1.0' above the 100 Year Flood Elevation

APPENDIX D

INVESTIGATIONS AND ANALYSES

INVESTIGATION AND ANALYSIS

Encroachment of floodplains, such as artificial barriers, reduces the water carrying capacity and increases flood heights, thus increasing flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from the floodplain development against the resulting increased flood hazard.

For purposes of the flood insurance program the concept of a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1% frequency floodplain is divided into a floodway and a flood fringe. The floodway is the channel of the stream plus any adjacent floodplain areas that must be kept free of encroachment in order that the 1% frequency flood can be carried without a substantial increase in flood heights. In Nebraska the floodway is described in the Nebraska Revised Statutes of 1943 in Sections 31-1008 (Reference 15). In this standard the encroachment in the floodplain is limited to that which will cause only an insignificant increase in flood heights. The Nebraska Natural Resources Commission (NNRC) has defined that the floodway be determined using no more than a one-foot surcharge. The one-foot surcharge floodway proposed

for this study was computed by equal conveyance reduction from each side of the floodplain.

As shown in the Supplement of Floodway Maps, the floodway boundaries were determined at individual cross sections. Between the cross sections the boundaries are interpolated.

The area between the floodway and boundary of 1% frequency flood is termed the flood fringe. The flood fringe thus encompasses the portion of the floodplain that could be completely obstructed without increasing the water surface elevations of the 1% frequency flood more than one foot at any point. The typical relationship between the flood fringe and the floodway are shown in the floodway schematic (Figure 3).

FLOODWAY SCHEMATIC

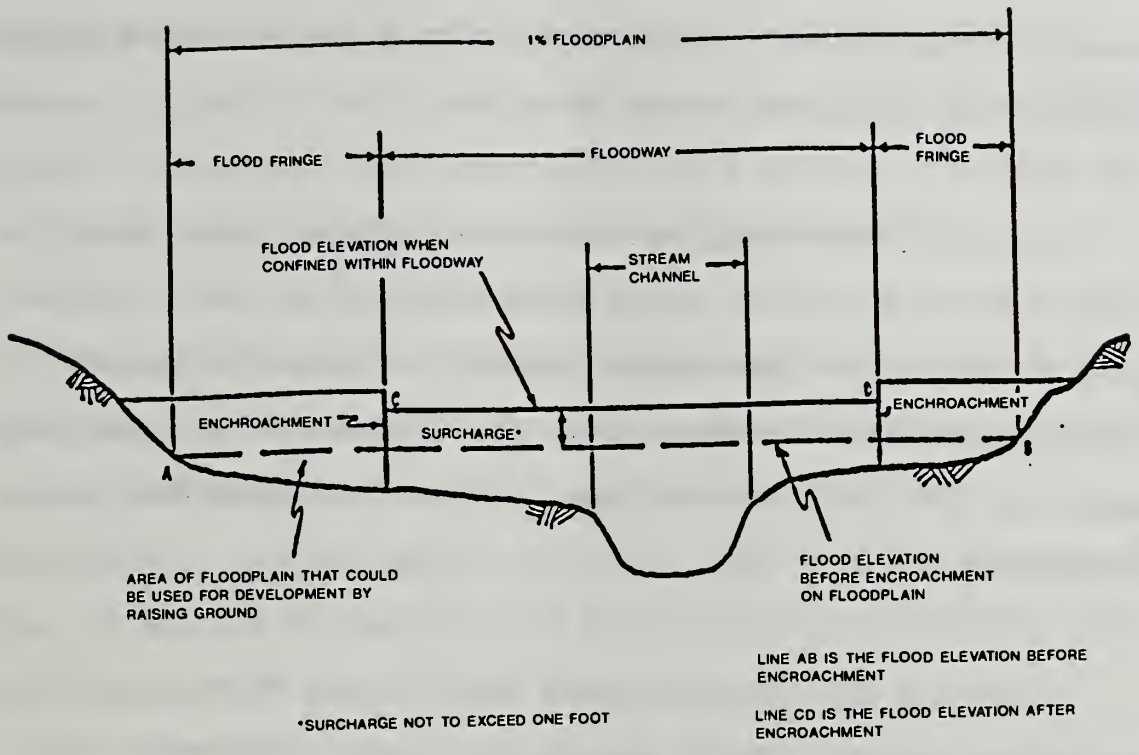


Figure 3

Uses of the floodway are allowable providing they do not restrict flow in any way causing an increase in flow depths. Also, no structure for human habitation is permitted in the floodway. Any use of the fringe area is permissable, provided any structure in the fringe area has its lowest floor elevation one foot above the 1% frequency flood elevation.

Field surveys were made of bridges, roads, structures, and the channel and floodplain within the study area to represent the hydraulic characteristics of the stream system in 1991. Surveys were made using third order accuracy. To be classed as third order accuracy, the error of closure

should not be more than the product of 0.05 times the square root of the length surveyed in miles.

For the Loseke-Taylor Creek, 115 valley and channel cross sections plus 33 roads were surveyed by the Nebraska Natural Resources Commission (NNRC) (Reference 16). Aerial photography flown February 1990 (Reference 17) was used as a base for the Flood Hazard Maps used to delineate the floodplain.

Physical data was obtained from United States Geological Survey (USGS) topographic maps (Reference 18), soil survey maps (References 4 and 5), local topographic maps, and aerial photographs (Reference 17), as well as on-site field inspections. The watershed boundary was determined from both map studies and field checks. The watershed was divided into sub-areas. Drainage areas for the sub-areas were measured. Times of concentration were calculated for each of the sub-watersheds.

Channel flood routings to establish peak discharge-frequency relationships were made using the Computer Program for Project Formulation Hydrology, Technical Release 20 (TR20), dated September 1, 1983 (Reference 19), and U.S. Department of Agriculture computer facilities. The Modified Attenuation-Kinematic (Att-Kin) method of routing through stream channels is used by this program. This method is

derived from inflow-outflow hydrograph relationships. Several types of data were used in developing this watershed model. Drainage area, hydrologic soil groups, and land use and cover were used to develop runoff hydrographs.

Temporary flood water storage at several of the road culverts and bridges was recognized as a potential to modify downstream peak discharges. Data was gathered and evaluated. Opening sizes and type, head available from the top of opening to top of road fill, and storage shapes were determined.

The watershed model was calibrated using stream gauges on similar watersheds nearby. These gauges were evaluated using Bulletin 17B Guidelines for Determining Flood Flow Frequency (Reference 20). Other studies of Colfax and Platte Counties (References 11 and 12) were used in the calibration.

An analysis of the hydraulic characteristics of the creeks was carried out to provide stage estimates for floods of selected recurrence intervals along each of the streams. The water surface elevations (stage) were established based upon the physical elements present such as the channel size and shape, the floodplain size and shape, the bridge sizes and shapes, and the Manning's roughness coefficients (Reference 21). The hydraulic computations were made using

the SCS Hydraulic Model WSP-2, Technical Release 61 (TR61) (Reference 22). This model employs the standard step method for backwater profiles. The method involves a computational procedure which estimates total energy at each stream cross section and accounts for friction losses between sections. The bridge effects on stream hydraulics were accounted for in TR61 using the Bureau of Public Roads (BPR) Method (Reference 23). The bridge method has been formulated by the principle of conservation of energy between the point of maximum backwater upstream from the bridge and a point downstream from the bridge at which normal stage has been established. The culverts were evaluated by the principle of conservation of energy and consideration of the depth of headwater and tailwater, the barrel shape and cross-sectional areas, the type of inlet, and shape of headwall.

Economic analysis was performed by the use of the ECON-2 computer program (Reference 24). This includes the determination of crop and pasture, other agriculture and non-agricultural damages. Basically, three types of input data are required: economic, hydraulic and hydrologic related data.

The ECON-2 program is designed to use hydraulic and hydrologic data from flood routing as part of the input data. It can be used, therefore, to appraise floodwater damages when the acres flooded have been determined. The

program computes the average annual damages to crops and pasture where floodwater damages can be related to flood depths or elevations. Some types of damage such as damage to the land from voiding through gully encroachment or bank caving, and deposition of sediment have not been included in the program. These types of damages often are not correlated directly with flood peaks and their causal factors are not subject to hydrologic analysis.

For the economic input section of ECON-2, several processes need to be completed. The major tasks are determining the crop distribution, crop yields, and the composite acre value of land use for each reach in the floodplain.

The method used for determining crop distribution in each reach of the floodplain was to secure recent aerial photographs and make a detailed inspection of the photographs. With the use of the aerial photographs an estimation was made of the acres of pasture, cropland and miscellaneous land uses in each one half section that the creek ran through. The percentages of crops irrigated and the kinds and percentages of crops grown were determined by field inspection and by using Nebraska Agricultural Statistics county data (Reference 25).

After the crop distribution is determined, it is displayed by reach for the ECON-2 program. There are certain economic factors that are considered in determining the length of a reach to be studied and the number of cross sections within this reach. Some of the economic factors are the uniformity of the crop distribution, the fertility and width of the floodplain, and the total value of a floodplain acre. Ordinarily, if crops and values subject to damage do not differ significantly and there is no localized effect of a structural measure, such as channel improvement, several cross sections can be combined into one evaluation reach for damage analysis. The reaches that were chosen are shown in Figure 1.

Crop yields were determined by using two general sources: (1) Nebraska Agricultural Statistics data (Reference 25), and (2) SCS published soil surveys (References 11 and 12). Specific soils in the floodplains were identified. Crop yields were weighted according to the percentage of those soils in Colfax and Platte Counties.

A five year county average yield was calculated from Nebraska Agricultural Statistics. These county average yields were then adjusted for floodplain yields by applying a ratio derived from the differences between floodplain soil yields and whole county average soil yields in the SCS published soil surveys.

Crop prices for ECON-2 are obtained from the United States Department of Agriculture. The crop prices are derived by using information obtained from a structural econometric model of the agricultural sector as well as inputs from commodity specialists in the Economic Research Service. The simulation model procedure was used to minimize short-run distortions in market prices caused by such factors as abnormal weather patterns and short-term fluctuations in the foreign demand for agricultural products. Commodity specialists then used the model results to derive consistent commodity prices and indices for those commodities not included in the simulation model.

Considering the crop distribution in the floodplain, the average yields of the crops, and current normalized prices, a composite damageable value per acre of floodplain is determined.

Damage factors for ECON-2 are derived for each crop. The month of the growing season and the depth of flooding are both considered in deriving the factors. The depth of water is given in these ranges: 0-1 feet, 1-3 feet, and any depth greater than three feet. The percent damage to a given crop at each depth increment of flooding during a given month is used by the computer. The damage factors used allow for normal duration of flooding, but in some cases additional duration of flooding should be considered.

Where this is the case, an adjustment in the basic damage factor to account for the added duration can be made.

The crop damage factors are given by month because at different times of the year the crops are more susceptible to damage from flooding than during other months. For example, six inches of water in May or June causes more damage to corn than six inches in August when the corn is more mature.

The damage is expressed as a percentage of the gross value (price times yield) of the crop if it were undamaged. Included in the damage calculation is the physical loss in yield together with any reduction in value per unit, plus additional production costs incurred, minus expenses saved, such as harvesting, hauling, and storing. The theoretical basis for this approach is that when a farmer reserves part of his land for a given crop, he has done so with the expectation of obtaining a certain return based upon yield, price, and normal production expenses. A flood which affects any of these factors unfavorably will reduce his net income.

Included in the ECON-2 input data is the percent chance of floods and the storm series. The data lists the percent chance of occurrence of the largest storm first and other evaluated storms will be listed in descending order.

The seasonal distribution of floods is also taken into account when making economic evaluations. This is necessary because of the difference in flood damage resulting from given flood stages during different periods of plant growth. The flood distribution refers to the percent of the total number of floods for a given year that occur in the months the soil is not frozen.

APPENDIX E

ELEVATION BENCH MARKS

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 7
Elevation: 1519.659
Book No. 1 Page No. 20
Date: 12-88
County: PLATTE
Quad. HUMPHREY SOUTHEAST
Section: 8-18N-1E.
CHISELED CROSS ON WEST END OF NORTH HEADWALL OF COUNTY BRIDGE OVER SCHAAD CREEK AI ON EAST SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 8
Elevation: 1499.439
Book No. 1 Page No. 21
Date: 12-88
County: PLATTE
Quad. HUMPHREY SOUTHEAST
Section: 3-18N-1E.
CHISELED CROSS AT SOUTHEAST END OF SOUTHEAST WINGWALL OF COUNTY BRIDGE OVER SCHAAI CREEK AND ON WEST SIDE OF THE S.W. 1/4 OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 9
Elevation: 1481.522
Book No. 1 Page No. 22
Date: 12-88
County: PLATTE
Quad. HUMPHREY SOUTHEAST
Section: 2-18N-1E.
CHISELED CROSS IN THE SOUTHEAST CORNER OF A BRIDGE DECK OVER SCHAAD CREEK AND ON ' WEST SIDE OF THE SOUTHEAST 1/4 OF THE NORTHWEST 1/4 OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 10
Elevation: 1476.861
Book No. 1 Page No. 24
Date: 12-88
County: PLATTE
Quad. HUMPHREY SOUTHEAST
Section: 11-18N-1E.
CHISELED CROSS IN THE SOUTHWEST CORNER OF A BRIDGE DECK OVER LOSEKE CREEK AND ON ' NORTH SIDE OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 11
Elevation: 1541.108
Book No. 1 Page No. 27
Date: 12-88
County: PLATTE
Quad. HUMPHREY SOUTHEAST
Section: 36-19N-1E.
CHISELED CROSS IN THE SOUTHWEST END OF WEST HEADWALL OF BRIDGE AND ON THE NORTH S OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 12
Elevation: 1550.130
Book No. 1 Page No. 30
Date: 12-88
County: PLATTE
Quad. HUMPHREY SOUTHEAST
Section: 13-19N-1E.
CHISELED CROSS IN THE SOUTHEAST CORNER OF A BRIDGE DECK AND IN THE SOUTHWEST CORN OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 37
Elevation: 1582.098
Book No. 7 Page No. 6
Date: 2-91
County: PLATTE
Quad. HUMPHREY S.E.
Section: 20-19N-1E
CHISELED CROSS IN THE S.E. CORNER OF A COUNTY BRIDGE DECK AND ON THE NORTH SIDE OF THE N.W. 1/4 OF THE N.W. 1/4 OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 38
Elevation: 1564.886
Book No. 7 Page No. 7
Date: 2-91
County: PLATTE
Quad. HUMPHREY S.E.
Section: 17-19N-1E
CHISELED CROSS ON THE SOUTH END OF THE EAST CURB OF A COUNTY BRIDGE AND ON THE WEST SIDE OF THE N.W. 1/4 OF THE N.W. 1/4 OF THE S.W. 1/4 OF THE SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 39
Elevation: 1639.512
Book No. 7 Page No. 39
Date: 8-91
County: PLATTE
Quad. HUMPHREY
Section: 11-19N-1W
CHISELED CROSS ON TOP AND SOUTH END OF A C.M.P., ON THE N.E. CORNER OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 40
Elevation: 1555.724
Book No. 7 Page No. 70
Date: 8-91
County: PLATTE
Quad. CRESTON
Section: 12-19N-1E
CHISELED CROSS ON TOP AND WEST END OF THE SOUTH CURB OF A COUNTY BRIDGE, ON THE NORTH SIDE OF THE N.W. 1/4 OF THE N.E. 1/4 OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 41
Elevation: 1558.343
Book No. 8 Page No. 21
Date: 10-91
County: PLATTE
Quad. HUMPHREY S.E.
Section: 4-18N-1E
CHISELED CROSS ON THE TOP AND SOUTH END OF THE EAST CURB OF A SMALL BRIDGE, ON THE WEST SIDE OF THE N.W. 1/4 OF THE S.W. 1/4 OF THE SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 31
Elevation: 1582.845
Book No. 1 Page No. 64
Date: 3-89
County: PLATTE
Quad. HUMPHREY S.E.
Section: 19-19N-1E
CHISELED CROSS IN THE SOUTHWEST CORNER OF A CONCRETE BRIDGE DECK AND IN THE NORTHWEST CORNER OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 32
Elevation: 1575.784
Book No. 1 Page No. 66
Date: 3-89
County: PLATTE
Quad. PLATTE CENTER
Section: 14-19N-1W
CHISELED CROSS IN THE WEST END OF THE SOUTH HEADWALL OF A BRIDGE OVER LOSEKE CREEI AND ON THE EAST SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 33
Elevation: 1539.381
Book No. 2 Page No. 28
Date: 8-89
County: COLFAX
Quad. CLARKSON S.W.
Section: 6-18N-2E
CHISELED CROSS IN THE N.W. CORNER OF A BRIDGE DECK AND ON THE SOUTH SIDE OF THE S. 1/4 OF THE S.E. 1/4 OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 34
Elevation: 1501.115
Book No. 4 Page No. 26
Date: 9-90
County: PLATTE
Quad. HUMPHREY S.E.
Section: 34-19N-1E
CHISELED CROSS IN THE N.W. CORNER OF A CONCRETE DECK OF BRIDGE OVER SPRING CREEK AI ON THE SOUTH SIDE OF THE SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 35
Elevation: 1529.146
Book No. 5 Page No. 24
Date: 10-90
County: COLFAX
Quad. CLARKSON S.W.
Section: 3-18N-2E
CHISELED CROSS ON THE S.E. STEEL SUPPORT OF AN 8' C.M.P., 350' NORTH OF THE 1/2 MIL LINE AND ON THE WEST SIDE OF THE SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 36
Elevation: 1560.628
Book No. 6 Page No. 13
Date: 2-91
County: PLATTE
Quad. HUMPHREY S.E.
Section: 7-18N-1E
CHISELED CROSS ON THE S.W. CORNER OF THE S.W. CONCRETE WINGWALL OF A COUNTY BRIDGE WHICH IS 250 FT. WEST OF THE 1/2 MILE LINE AND ON THE NORTH SIDE OF THE SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 25
Elevation: 1586.362
Book No. 1 Page No. 56
Date: 12-88
County: COLFAX
Quad. LEIGH
Section: 6-19N-2E.
RAILROAD SPIKE IN THE SOUTHWEST PILING OF THE NORTHEAST WINGWALL OF A COUNTY BRIDGE ON THE 1/4 MILE LINE AND ON THE SOUTH SIDE OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 26
Elevation: 1560.468
Book No. 1 Page No. 57
Date: 12-88
County: COLFAX
Quad. CRESTON
Section: 7-19N-2E.
RAILROAD SPIKE IN THE PILING IN THE SOUTHEAST WINGWALL OF A COUNTY BRIDGE OVER EAST BRANCH LOSEKE CREEK AND ON THE WEST SIDE OF THE SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 27
Elevation: 1568.740
Book No. 1 Page No. 59
Date: 3-89
County: PLATTE
Quad. CRESTON
Section: 12-19N-1W
CHISELED CROSS IN THE NORTHWEST CORNER OF THE CONCRETE DECK OF A COUNTY BRIDGE OVER LOSEKE CREEK AND ON THE SOUTH SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 28
Elevation: 1574.998
Book No. 1 Page No. 59
Date: 3-89
County: PLATTE
Quad. HUMPHREY
Section: 13-19N-1W
HEAD OF A RAILROAD SPIKE IN THE NORTHWEST PILING OF THE SOUTHEAST WINGWALL OF A SMALL COUNTY BRIDGE WHICH IS APPROX. 250' EAST OF THE 1/2 MILE LINE AND ON THE NORTH SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 29
Elevation: 1603.191
Book No. 1 Page No. 61
Date: 3-89
County: PLATTE
Quad. PLATTE CENTER
Section: 14-19N-1W
HEAD OF RAILROAD SPIKE IN A PILING IN THE NORTHEAST WINGWALL OF A SMALL COUNTY BRIDGE ON THE 1/4 MILE LINE AND ON THE WEST SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 30
Elevation: 1592.913
Book No. 1 Page No. 62
Date: 3-89
County: PLATTE
Quad. PLATTE CENTER
Section: 14-19N-1W
HEAD OF A RAILROAD SPIKE IN A PILING IN THE NORTHEAST WINGWALL OF A COUNTY BRIDGE OVER LOSEKE CREEK AND ON THE WEST SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 19
Elevation: 1539.387
Book No. 1 Page No. 41
Date: 12-88
County: PLATTE
Quad. CRESTON
Section: 12-19N-1E.
RAILROAD SPIKE IN THE NORTHEAST PILING IN THE NORTHEAST WINGWALL OF A COUNTY BRIDG OVER THE EAST BRANCH OF LOSEKE CREEK AND ON THE WEST SIDE OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 20
Elevation: 1537.631
Book No. 1 Page No. 43
Date: 12-88
County: PLATTE
Quad. CRESTON
Section: 9-19N-1E.
CHISELED CROSS IN THE SOUTHEAST CORNER OF COUNTY BRIDGE DECK AND ON THE NORTH SIDE OF THE NORTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 21
Elevation: 1554.139
Book No. 1 Page No. 46
Date: 12-88
County: PLATTE
Quad. CRESTON
Section: 9-19N-1E.
CHISELED CROSS IN THE SOUTHEAST CORNER OF A BRIDGE DECK OVER LOSEKE CREEK AND IN TI SOUTHWEST CORNER OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 22
Elevation: 1540.728
Book No. 1 Page No. 49
Date: 12-88
County: PLATTE
Quad. CRESTON
Section: 8-19N-1E.
CHISELED CROSS IN THE NORTHWEST CORNER OF THE NORTH ABUTMENT OF A COUNTY BRIDGE OVE LOSEKE CREEK AND IN THE SOUTHEAST CORNER OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 23
Elevation: 1523.320
Book No. 1 Page No. 51
Date: 12-88
County: PLATTE
Quad. CRESTON
Section: 10-19N-1E.
RAILROAD SPIKE IN THE PILING OF THE NORTHEAST WINGWALL OF A COUNTY BRIDGE OVER LOSEKE CREEK AND ON THE WEST SIDE OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 24
Elevation: 1575.834
Book No. 1 Page No. 54
Date: 12-88
County: COLFAX
Quad. LEIGH
Section: 8-19N-2E.
CHISELED CROSS IN THE TOP AND NORTH END OF EAST CURB OF COUNTY BRIDGE OVER EAST BRANCH LOSEKE CREEK AND ON THE WEST SIDE OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 13
Elevation: 1503.754
Book No. 1 Page No. 35
Date: 12-88
County: PLATTE
Quad. HUMPHREY SOUTHEAST
Section: 26-19N-1E.
CHISELED CROSS IN THE NORTHEAST CORNER OF A BRIDGE DECK OVER LOSEKE CREEK ON THE SOUTH SIDE OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 14
Elevation: 1511.424
Book No. 1 Page No. 36
Date: 12-88
County: PLATTE
Quad. HUMPHREY SOUTHEAST
Section: 23-19N-1E.
CHISELED CROSS ON THE SOUTHEAST CORNER OF THE SOUTH HEADWALL OF A CULVERT JUST SOU OF THE 1/2 MILE LINE AND ON THE WEST SIDE OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 15
Elevation: 1511.693
Book No. 1 Page No. 37
Date: 12-88
County: PLATTE
Quad. HUMPHREY SOUTHEAST
Section: 15-19N-1E.
CHISELED CROSS ON THE SOUTHWEST END OF SOUTHWEST CONCRETE WINGWALL OF COUNTY BRIDG OVER LOSEKE CREEK AND ON THE EAST SIDE OF THE SOUTHEAST 1/4 OF THE SOUTHEAST 1/4 C SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 16
Elevation: 1525.705
Book No. 1 Page No. 38
Date: 12-88
County: PLATTE
Quad. CRESTON
Section: 10-19N-1E.
CHISELED CROSS IN THE TOP AND EAST END OF SOUTH TWIN 36INCH C.M.P. AND IN THE SOUTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 17
Elevation: 1524.803
Book No. 1 Page No. 38
Date: 12-88
County: PLATTE
Quad. CRESTON
Section: 10-19N-1E.
CHISELED CROSS IN CENTER AND TOP OF EAST CONCRETE CURB OF COUNTY ROAD BRIDGE OVER EAST BRANCH OF LOSEKE CREEK AND IN THE NORTHEAST CORNER OF THE NORTHWEST 1/4 OF TH SOUTHEAST 1/4 OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 18
Elevation: 1556.384
Book No. 1 Page No. 39
Date: 12-88
County: PLATTE
Quad. CRESTON
Section: 2-19N-1E.
CHISELED CROSS IN THE NORTHEAST CORNER OF A BRIDGE DECK 200ft. WEST OF A DRIVE NOR AND ON THE SOUTH SIDE OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 1
Elevation: 1552.957
Book No. 1 Page No. 5
Date: 12-88
County: PLATTE
Quad. HUMPHREY SOUTHEAST
Section: 12-18N-1W.

RAILROAD SPIKE IN THE SOUTHWEST PILING OF SOUTHWEST WINGWALL OF COUNTY BRIDGE OVER SHAAD CREEK AND ON THE EAST SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 2
Elevation: 1557.682
Book No. 1 Page No. 7
Date: 12-88
County: PLATTE
Quad. PLATTE CENTER
Section: 13-18N-1W.

RAILROAD SPIKE IN SOUTHWEST PILING OF SOUTHWEST WINGWALL OF COUTY BRIDGE OVER SCHAAI CREEK AND ON THE NORTH SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 3
Elevation: 1561.554
Book No. 1 Page No. 8
Date: 12-88
County: PLATTE
Quad. PLATTE CENTER
Section: 14-18N-1W.

CHISELED CROSS IN TOP AND NORTH END OF WEST HEADWALL OF CULVERT THROUGH WHICH SHAAD CREEK FLOWS AND ON EAST SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 4
Elevation: 1535.993
Book No. 1 Page No. 12
Date: 12-88
County: PLATTE
Quad. HUMPHREY SOUTHEAST
Section: 7-18N-1E.

CHISELED CROSS ON SOUTH END OF THE NORTHWEST CONCRETE WINGWALL OF COUNTY BRIDGE OVE SCHAAD CREEK AND ON EAST SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 5
Elevation: 1506.926
Book No. 1 Page No. 14
Date: 12-88
County: PLATTE
Quad. HUMPHREY SOUTHEAST
Section: 4-18N-1E.

CHISELED CROSS IN NORTHWEST CORNER OF BRIDGE DECK OVER SCHAAD CREEK AND ON SOUTH SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM DR LT 6
Elevation: 1521.825
Book No. 1 Page No. 14
Date: 12-88
County: PLATTE
Quad. HUMPHREY SOUTHEAST
Section: 3-18N-1E.

CHISELED CROSS IN CENTER OF NORTH CURB OF SMALL BRIDGE JUST EAST OF 'T' ROAD NORTH AND ON SOUTH SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM MD LT 7
Elevation: 1575.901
Book No. 2 Page No. 16
Date: 12-88
County: COLFAX
Quad. CLARKSON SOUTHWEST
Section: 22-19N-2E
HEAD OF RAILROAD SPIKE IN A PILING IN THE NORTHEAST WINGWALL OF A COUNTY BRIDGE OVER TAYLOR CREEK AND ON THE SOUTH SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM MD LT 8
Elevation: 1545.142
Book No. 2 Page No. 19
Date: 12-88
County: COLFAX
Quad. CLARKSON SOUTHWEST
Section: 25-19N-2E
HEAD OF A RAILROAD SPIKE IN A LONE PILING OF THE SOUTHEAST WINGWALL OF A SMALL COUNTY BRIDGE AND ON THE NORTH SIDE OF THE NORTHEAST 1/4 OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM MD LT 9
Elevation: 1543.878
Book No. 2 Page No. 20
Date: 12-88
County: COLFAX
Quad. CLARKSON SOUTHWEST
Section: 28-19N-2E
CHISELED CROSS IN THE NORTHEAST CORNER OF THE CONCRETE BRIDGE DECK OVER TAYLOR CREE AND ON THE SOUTH SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM MD LT 10
Elevation: 1497.975
Book No. 2 Page No. 22
Date: 12-88
County: COLFAX
Quad. CLARKSON SOUTHWEST
Section: 4-18N-2E
CHISELED CROSS IN THE NORTHWEST CORNER OF A CONCRETE BRIDGE DECKOVER TAYLOR CREEK AND ON THE SOUTH SIDE OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM MD LT 11
Elevation: 1525.688
Book No. 2 Page No. 37
Date: 9-89
County: PLATTE
Quad. HUMPHREY S.E.
Section: 27-19N-1E
HEAD OF RAILROAD SPIKE IN THE TOP OF A LONE PILING IN THE NORTHEAST WINGWALL OF A COUNTY BRIDGE AND IN THE S.W. CORNER OF THE S.E. 1/4 OF THE S.W. 1/4 OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM MD LT 1
Elevation: 1476.868
Book No. 2 Page No. 7
Date: 12\88
County: COLFAX
Quad. CLARKSON SOUTHWEST
Section: 8-18N-2E.
CHISELED CROSS ON TOP AND INSIDE END OF THE SOUTHWEST CONCRETE WINGWALL OF A CONCRETE COUNTY BRIDGE OVER TAYLOR CREEK AND ON THE SOUTHEAST CORNER OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM MD LT 2
Elevation: 1510.313
Book No. 2 Page No. 8
Date: 12\88
County: COLFAX
Quad. CLARKSON SOUTHWEST
Section: 8-18N-2E.
CHISELED MARK ON THE WEST END OF A 4 1/2 ft. ROUND C.M.P. ON THE WEST SIDE OF A COUNTY ROAD AND ON THE 1/2 MILE LINE AND ON THE EAST SIDE OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM MD LT 3
Elevation: 1529.815
Book No. 2 Page No. 10
Date: 12-88
County: COLFAX
Quad. CLARKSON SOUTHWEST
Section: 33-19N-2E
CHISELED CROSS IN TOP OF THE SOUTHEAST STEEL I PILING IN NORTHWEST WINGWALL OF COUNTY BRIDGE AND ON THE SOUTH SIDE OF THE SOUTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM MD LT 4
Elevation: 1519.454
Book No. 2 Page No. 11
Date: 12-88
County: COLFAX
Quad. CLARKSON SOUTHWEST
Section: 4-18N-2E
CHISELED CROSS IN THE SOUTHWEST CORNER OF THE CONCRETE DECK OF A COUNTY BRIDGE OV TAYLOR CREEK AND ON THE NORTH SIDE OF SECTION

Project: LOSEKE-TAYLOR
Bench Mark No. BM MD LT 5
Elevation: 1598.084
Book No. 2 Page No. 12
Date: 12-88
County: COLFAX
Quad. CLARKSON SOUTHWEST
Section: 33-19N-2E
TOP AND NORTHWEST CORNER OF UNDERGROUND CABLE POST # 300-24 AND IN THE SOUTHEAST CORNER OF SECTION.

Project: LOSEKE-TAYLOR
Bench Mark No. BM MD LT 6
Elevation: 1555.933
Book No. 2 Page No. 14
Date: 12-88
County: COLFAX
Quad. CLARKSON SOUTHWEST
Section: 27-19N-2E
CHISELED CROSS IN THE TOP OF A STEEL I BEAM PILING AND IN THE SOUTHEAST WINGWALL A COUNTY BRIDGE OVER TAYLOR CREEK AND ON THE WEST SIDE OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM MD SC 19
Elevation: 1378.666
Book No. 1 Page No. 35
Date: 1988
County: COLFAX
Quad. SCHUYLER
Section: 35-18N-3E

TOP OF A 1.5 INCH DIA. BRASS CAP ON THE INSIDE END OF THE N.E. CONCRETE WINGWALL OF STATE HIGHWAY 15 BRIDGE NO. 11130 OVER SHELL CREEK AND ON THE S.W. CORNER OF THE N.W.1/4 OF THE N.W.1/4 OF SECTION (PAINTED ORANGE).

Project: SHELL CREEK
Bench Mark No. BM MD SC 20
Elevation: 1491.399
Book No. 1 Page No. 47
Date: 1989
County: PLATTE
Quad. PLATTE CENTER
Section: 23-18N-1W

TOP OF 1 1/2 INCH DIA. BRASS CAP ON W. END OF S. CONC. ABUTMENT OF COUNTY BRIDGE OVER SHELL CR. AND ON 1/2 MILE LINE EAST SIDE OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM MD SC 21
Elevation: 1499.413
Book No. 1 Page No. 48
Date: 1989
County: PLATTE
Quad. PLATTE CENTER
Section: 23-18N-1W

TOP OF R.R. SPIKE IN NORTH PILING ON EAST SIDE OF FIELD DRIVE SOUTH SIDE OF ROAD AND IN APPOX. CENTER OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM MD SC 22
Elevation: 1508.104
Book No. 1 Page No. 49
Date: 1989
County: PLATTE
Quad. PLATTE CENTER
Section: 22-18N-1W

CHISELED CROSS ON N.E. CORNER OF CONCRETE BRIDGE DECK AND ON S.E. CORNER OF S.W.1/4 N.E.1/4 OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM MD SC 23
Elevation: 1524.619
Book No. 1 Page No. 54
Date: 1989
County: PLATTE
Quad. PLATTE CENTER
Section: 19-18N-1W

CHISELED CROSS ON S.W. CORNER OF CONCRETE BRIDGE DECK AND NEAR N.E. CORNER OF N.W.1/4 N.W.1/4 OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM MD SC 24
Elevation: 1529.897
Book No. 1 Page No. 55
Date: 1989
County: PLATTE
Quad. PLATTE CENTER
Section: 24-18N-2W

CHISELED CROSS ON N.W. CORNER OF CONCRETE DECK OF COUNTY BRIDGE OVER SHELL CREEK AND ON EAST SIDE OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 13
Elevation: 1439.977
Book No. 3 Page No. 28
Date: 1988
County: COLFAX
Quad. CLARKSON S.W.
Section: 20-18N-2E

TOP OF R.R. SPIKE IN PILING IN S.E. WINGWALL OF COUNTY BRIDGE OVER SHELL CREEK AND ON WEST SIDE OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 14
Elevation: 1442.852
Book No. 3 Page No. 29
Date: 1988
County: COLFAX
Quad. CLARKSON S.W.
Section: 20-18N-2E

A CHISELED CROSS IN S.W. CORNER OF S.E. ABUTMENT OF COUNTY BRIDGE OVER TAYLOR CREEK AND ON NORTH SIDE OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 15
Elevation: 1438.999
Book No. 3 Page No. 30
Date: 1988
County: COLFAX
Quad. CLARKSON S.W.
Section: 21-18N-2E

TOP OF SMALL PLAIN BRASS CAP IN S.E. CORNER OF CONCRETE DECK OF COUNTY BRIDGE OVER SHELL CREEK AND ON WEST SIDE OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 16
Elevation: 1425.872
Book No. 3 Page No. 33
Date: 1988
County: COLFAX
Quad. CLARKSON S.W.
Section: 28-18N-2E

A CHISELED CROSS IN TOP AND CENTER OF STEEL I-BEAM PILING IN S.W. WINGWALL OF COUNTY BRIDGE OVER SHELL CREEK AND IN N.E. CORNER OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 17
Elevation: 1451.618
Book No. 3 Page No. 35
Date: 1988
County: COLFAX
Quad. CLARKSON S.W.
Section: 22-18N-2E

TOP OF R.R. SPIKE IN S.W. PILING OF S.W. WINGWALL OF SMALL COUNTY BRIDGE AND IN N.W. CORNER S.E.1/4 OF N.W.1/4 OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 18
Elevation: 1469.807
Book No. 3 Page No. 36
Date: 1988
County: COLFAX
Quad. CLARKSON S.W.
Section: 23-18N-2E

A CHISELED CROSS IN TOP AND CENTER OF STEEL I-BEAM PILING IN N.E. WINGWALL OF SMALL COUNTY BRIDGE AND ON N.S.1/2 MILE LINE AND IN S.W. CORNER OF N.W.1/4 OF N.E.1/4 OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 7
Elevation: 1477.950
Book No. 3 Page No. 21
Date: 1988
County: PLATTE
Quad. HUMPHREY S.E
Section: 19-18N-1E

A CHISELED CROSS IN N.W. CORNER OF DECK OF STATE BRIDGE OVER OVERFLOW CHANNEL AND ON EAST SIDE OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 8
Elevation: 1467.470
Book No. 3 Page No. 23
Date: 1988
County: PLATTE
Quad. HUMPHREY S.E
Section: 21-18N-1E

A CHISELED CROSS AT NORTH END OF N.E. CONCRETE WINGWALL OF COUNTY BRIDGE OVER SHELL CREEK AND ON WEST SIDE OF N.W.I/4 OF N.W.I/4 OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 9
Elevation: 1467.124
Book No. 3 Page No. 23
Date: 1988
County: PLATTE
Quad. HUMPHREY S.E
Section: 21-18N-1E

TOP OF R.R. SPIKE IN S.W. PILING OF N.E. WINGWALL OF COUNTY BRIDGE OVER OVERFLOW CHANNEL AND ON WEST SIDE OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 10
Elevation: 1466.256
Book No. 3 Page No. 25
Date: 1988
County: PLATTE
Quad. HUMPHREY S.E
Section: 21-18N-1E

A CHISELED CROSS IN S.W. CORNER OF CONCRETE DECK OF COUNTY BRIDGE OVER SHELL CREEK AND ON EAST SIDE OF N.E.1/4 OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 11
Elevation: 1463.849
Book No. 3 Page No. 25
Date: 1988
County: PLATTE
Quad. HUMPHREY S.E
Section: 21-18N-1E

A CHISELED CROSS IN S.W. CORNER OF CONCRETE DECK OF COUNTY BRIDGE OVER OVERFLOW CHANNEL AND ON EAST SIDE OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 12
Elevation: 1450.703
Book No. 3 Page No. 27
Date: 1988
County: COLFAX
Quad. CLARKSON S.W.
Section: 19-18N-2E

TOP OF R.R. SPIKE IN S.E. WINGWALL OF SMALL COUNTY BRIDGE AND ON NORTH SIDE OF N.E.I/4 OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 1
Elevation: 1411.760
Book No. 3 Page No. 11
Date: 1988
County: COLFAX
Quad. CLARKSON S.W.
Section: 26-18N-2E

A CHISELED CROSS IN CENTER OF SECOND STEEL PILING NORTH OF SOUTH END OF S.W WINGWALL OF COUNTY BRIDGE OVER SHELL CREEK AND ON EAST SIDE OF N.E.1/4 N.E.1/4.

Project: SHELL CREEK
Bench Mark No. BM DR SC 2
Elevation: 1449.541
Book No. 3 Page No. 13
Date: 1988
County: COLFAX
Quad. HUMPHREY S.E .
Section: 19-18N-2E

TOP R.R. SPIKE IN CENTER WOOD PILING OF N.E. WINGWALL OF COUNTY BRIDGE OVER SHELL CREEK AND ON WEST SIDE OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 3
Elevation: 1453.269
Book No. 3 Page No. 14
Date: 1988
County: PLATTE
Quad. HUMPHREY S.E
Section: 13-18N-1E

A CHISELED CROSS IN N.W. CORNER OF BRIDGE DECK OVER LOSEKE CREEK AND ON SOUTH SIDE OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 4
Elevation: 1450.802
Book No. 3 Page No. 14
Date: 1988
County: PLATTE
Quad. HUMPHREY S.E
Section: 24-18N-1E

A CHISELED CROSS IN S.W. CORNER OF BRIDGE DECK OVER SHELL CREEK AND IN S.E. CORNER OF N.W.1/4 N.W.1/4 OF SECTION.

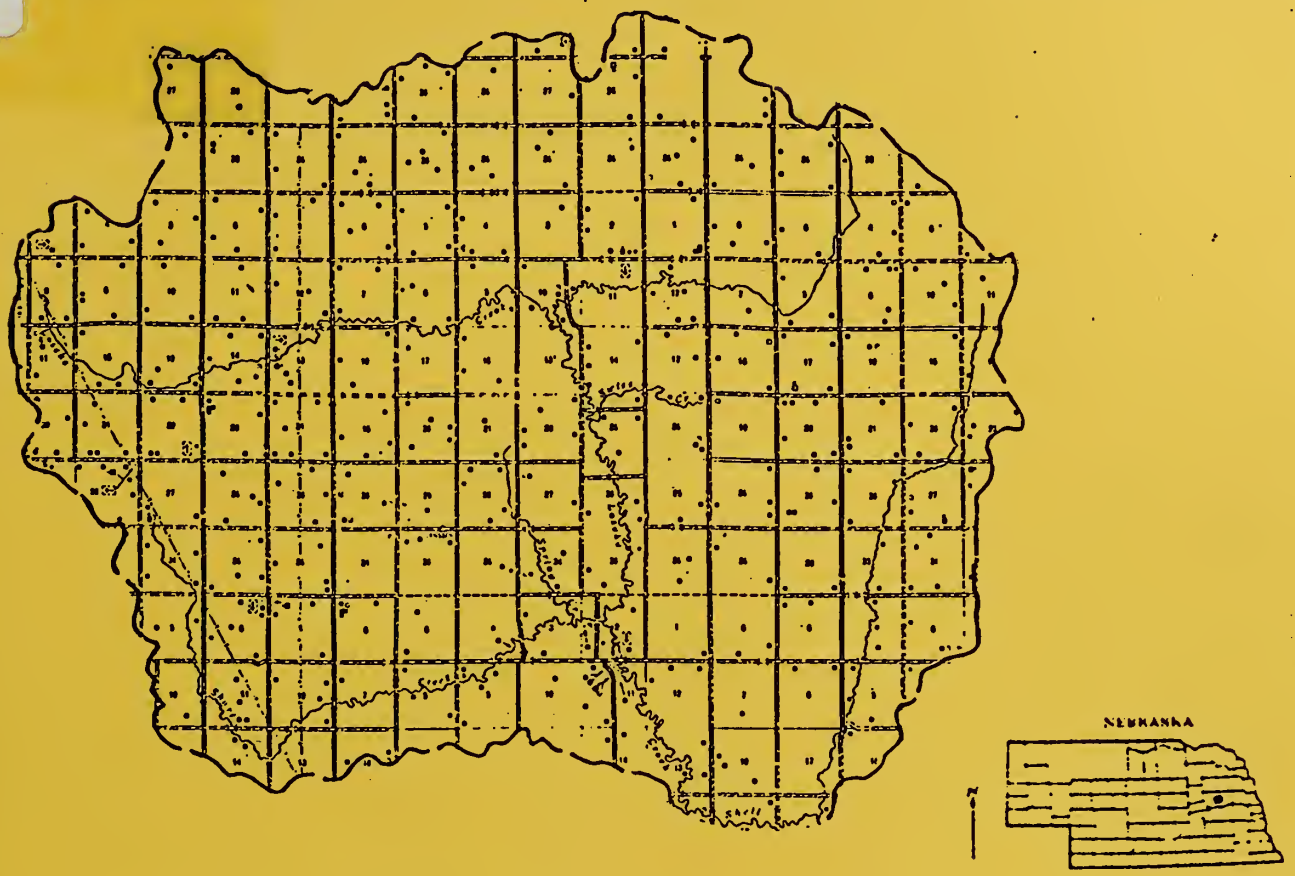
Project: SHELL CREEK
Bench Mark No. BM DR SC 5
Elevation: 1453.805
Book No. 3 Page No. 15
Date: 1988
County: PLATTE
Quad. HUMPHREY S.E
Section: 23-18N-1E

A CHISELED CROSS IN TOP AND SOUTH END OF WEST CURB OF COUNTY BRIDGE OVER SHELL CREEK AND IN N.E. CORNER OF S.E.1/4 OF N.W.1/4 OF SECTION.

Project: SHELL CREEK
Bench Mark No. BM DR SC 6
Elevation: 1478.565
Book No. 3 Page No. 21
Date: 1988
County: PLATTE
Quad. HUMPHREY S.E
Section: 19-18N-1E

A CHISELED CROSS IN N.W. CORNER OF DECK OF STATE BRIDGE OVER SHELL CREEK AND ON EAST SIDE OF SECTION.

LOSEKE-TAYLOR WATERSHED



FLOODPLAIN MANAGEMENT STUDY

Colfax and Platte Counties, Nebraska

APPENDIX F
FLOODWAY MAPS

prepared by:
United States
Department of
Agriculture

Soil
Conservation
Service
Lincoln, Nebraska

Nebraska Natural
Resources Commission
Lincoln, Nebraska

for:
Lower Platte North
Natural Resources District
Wahoo, Nebraska

OCTOBER 1993

APPENDIX F

FLOODWAY MAPS

FLOODWAY MAPS

This is Appendix F of the Loseke-Taylor Floodplain Management Study (FPMS). For detailed information about the watershed, information about the procedure used to perform the study, or more about the hydrology and hydraulics of the area see the Loseke-Taylor Floodplain Management Study dated September, 1993. This is the proposed floodway based on an equal reduction in conveyance on both sides of the floodplain. This floodway is subject to change by communities and landowners in the watershed, thus it is being distributed separately.

Encroachment of floodplains, such as artificial barriers, reduces the water carrying capacity and increases flood heights, thus increasing flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from the floodplain development against the resulting increased flood hazard.

For purposes of the flood insurance program the concept of a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1% recurring floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of the stream plus any adjacent floodplain areas

that must be kept free of encroachment in order that the 1% recurring flood can be carried without a substantial increase in flood heights. In Nebraska the minimum standard used to define the 1% floodway is described in the Nebraska Revised Statutes of 1943 under Sections 31-1001 through 31-1031. In this standard the encroachment in the floodplain is limited to that which will cause only an insignificant increase in flood heights. The Nebraska Department of Water Resources has defined that the floodway be determined using no more than a one foot surcharge. The one foot surcharge floodway proposed for this study was computed by equal conveyance reduction from each side of the floodplain.

The floodway boundaries were determined at individual cross sections. Between the cross sections the boundaries are interpolated.

The area between the floodway and boundary of 1% recurring flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the floodplain that could be completely obstructed without increasing the water surface elevations of the 1% flood more than one foot at any point. The typical relationship between the floodway fringe and the floodway are shown in the following floodway schematic.

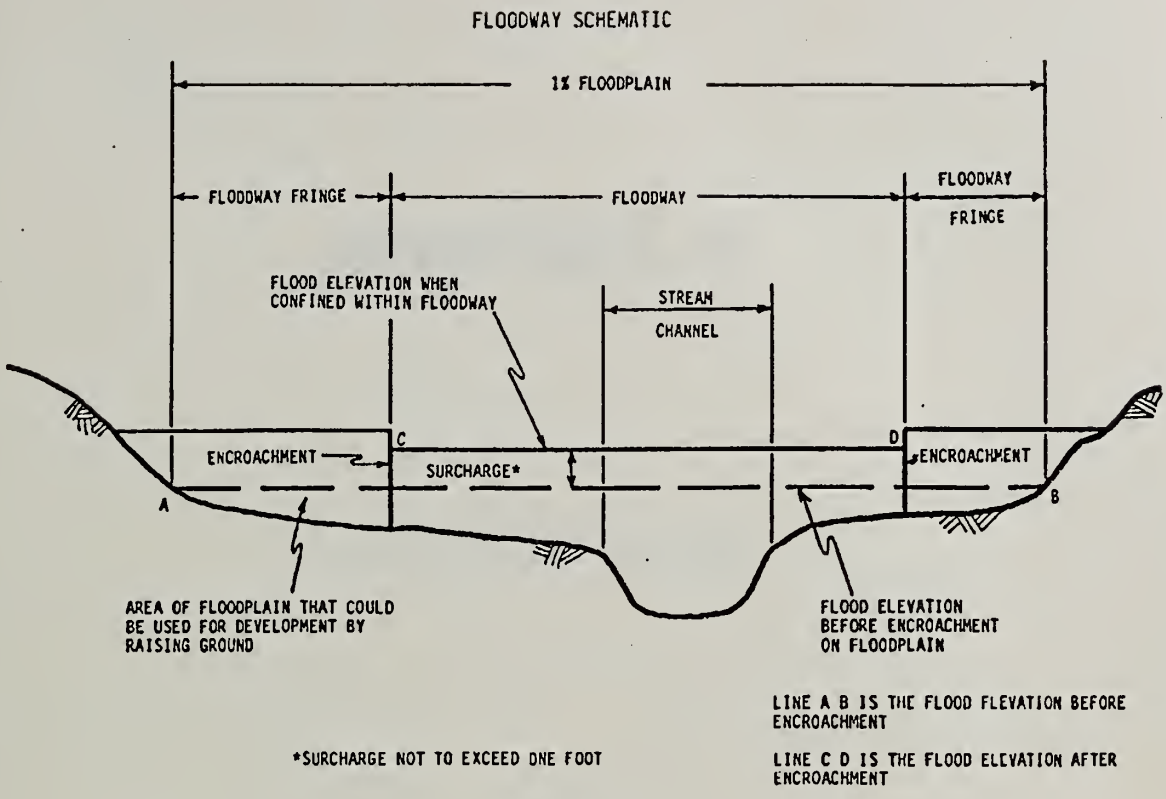
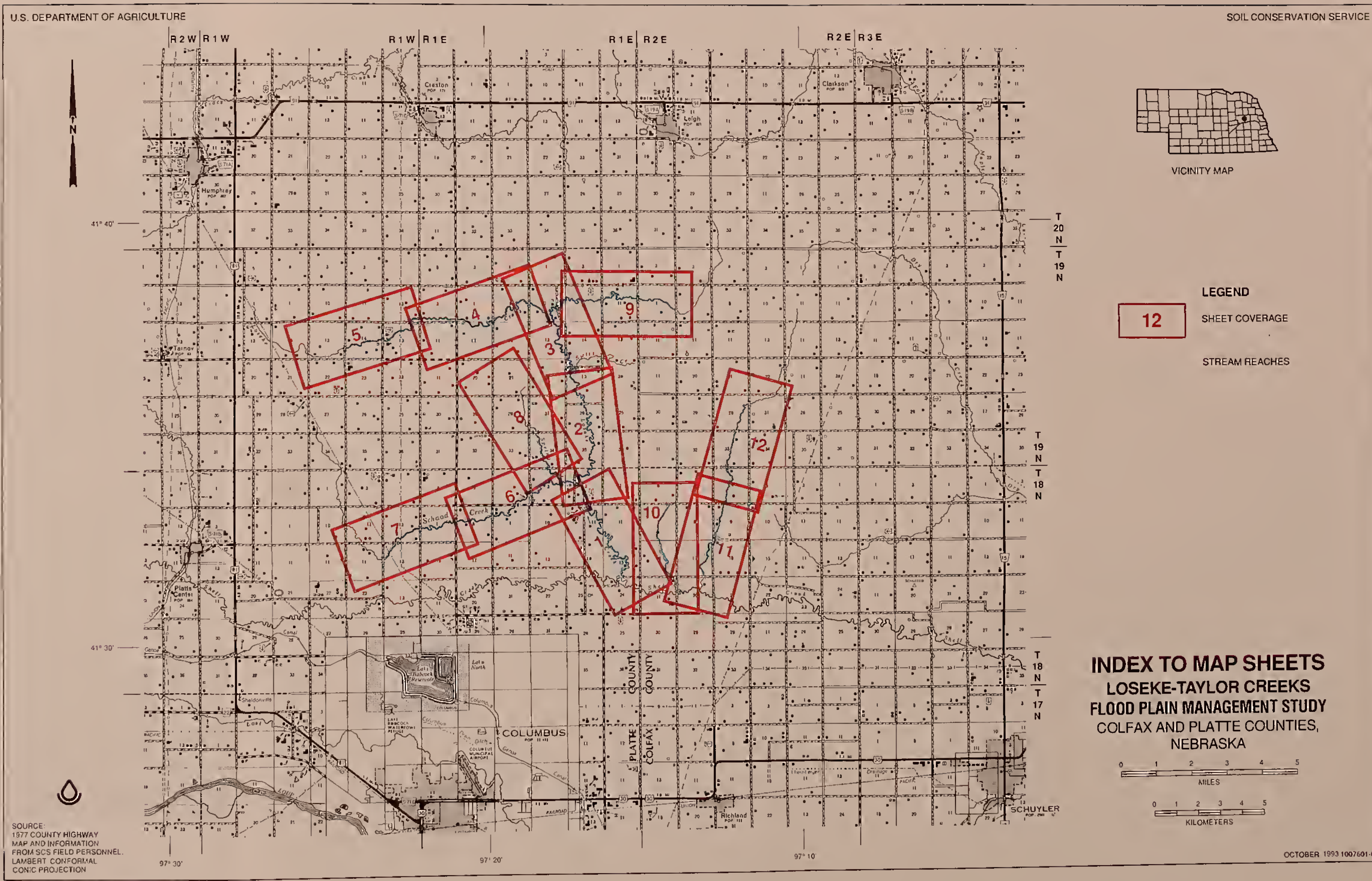


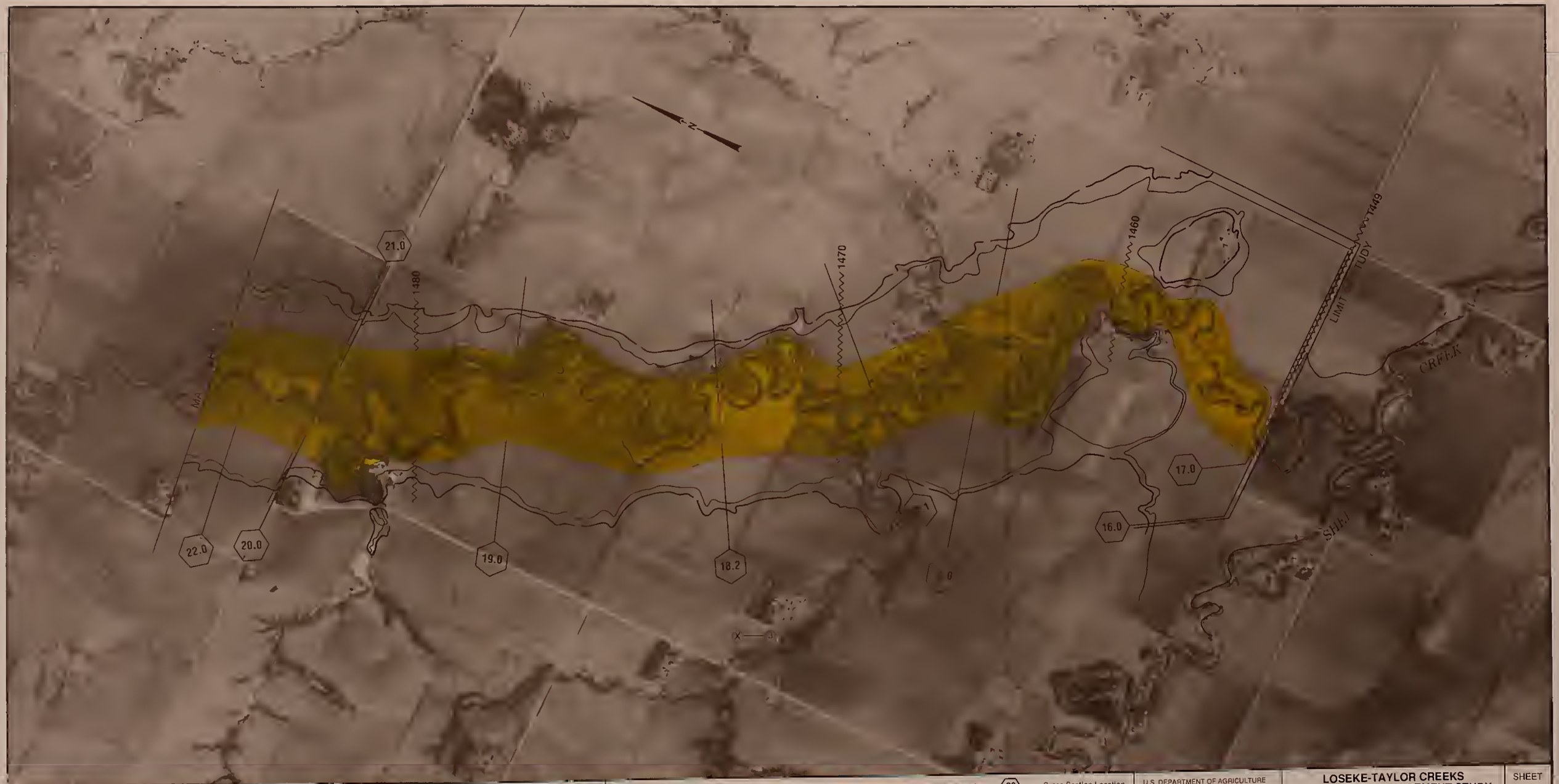
Figure 3

Uses of the floodway are allowable providing they do not restrict flow in any way causing an increase in flow depths. Also, no structure for human habitation is permitted in the floodway. Any use of the fringe area is permissable, provided any structure in the fringe area has its first floor elevation one foot above the 1% recurrence interval flood elevation.

APPENDIX F

FLOODWAY MAPS


U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
R 2 W | R 1 W
R 1 W | R 1 E
R 1 E | R 2 E
R 2 E | R 3 E
VICINITY MAP
LEGEND
12
SHEET COVERAGE
STREAM REACHES
T 20 N
T 19 N
T 18 N
T 17 N
41° 40'
41° 30'
97° 30'
97° 20'
97° 10'
Creston
Clarkson
Leigh
Humphrey
Tarnov
Platte Center
COLUMBUS
SCHUYLER
Richland
Shaad Creek
PLATTE COUNTY
COLFAX COUNTY
INDEX TO MAP SHEETS
LOSEKE-TAYLOR CREEKS
FLOOD PLAIN MANAGEMENT STUDY
COLFAX AND PLATTE COUNTIES, NEBRASKA
MILES
KILOMETERS
SOURCE:
1977 COUNTY HIGHWAY MAP AND INFORMATION FROM SCS FIELD PERSONNEL.
LAMBERT CONFORMAL CONIC PROJECTION
OCTOBER 1993 1007601-01



NOTE: LIMITS OF FLOODING SHOWN MAY VARY FROM ACTUAL LOCATIONS ON THE GROUND AND DUE TO INHERENT AERIAL PHOTOGRAPHIC DISPLACEMENT THE PHOTOGRAPHIC IMAGE MAY VARY FROM TRUE GROUND LOCATIONS

Nebraska Natural Resources Commission
1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND
- Floodway
- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- Evaluation Reach
- 20 Cross Section Location
- Limit of Study

U.S. DEPARTMENT OF AGRICULTURE
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LOSEKE-TAYLOR CREEKS FLOOD PLAIN MANAGEMENT STUDY
COLFAX & PLATTE COUNTIES, NEBRASKA

SHEET 1

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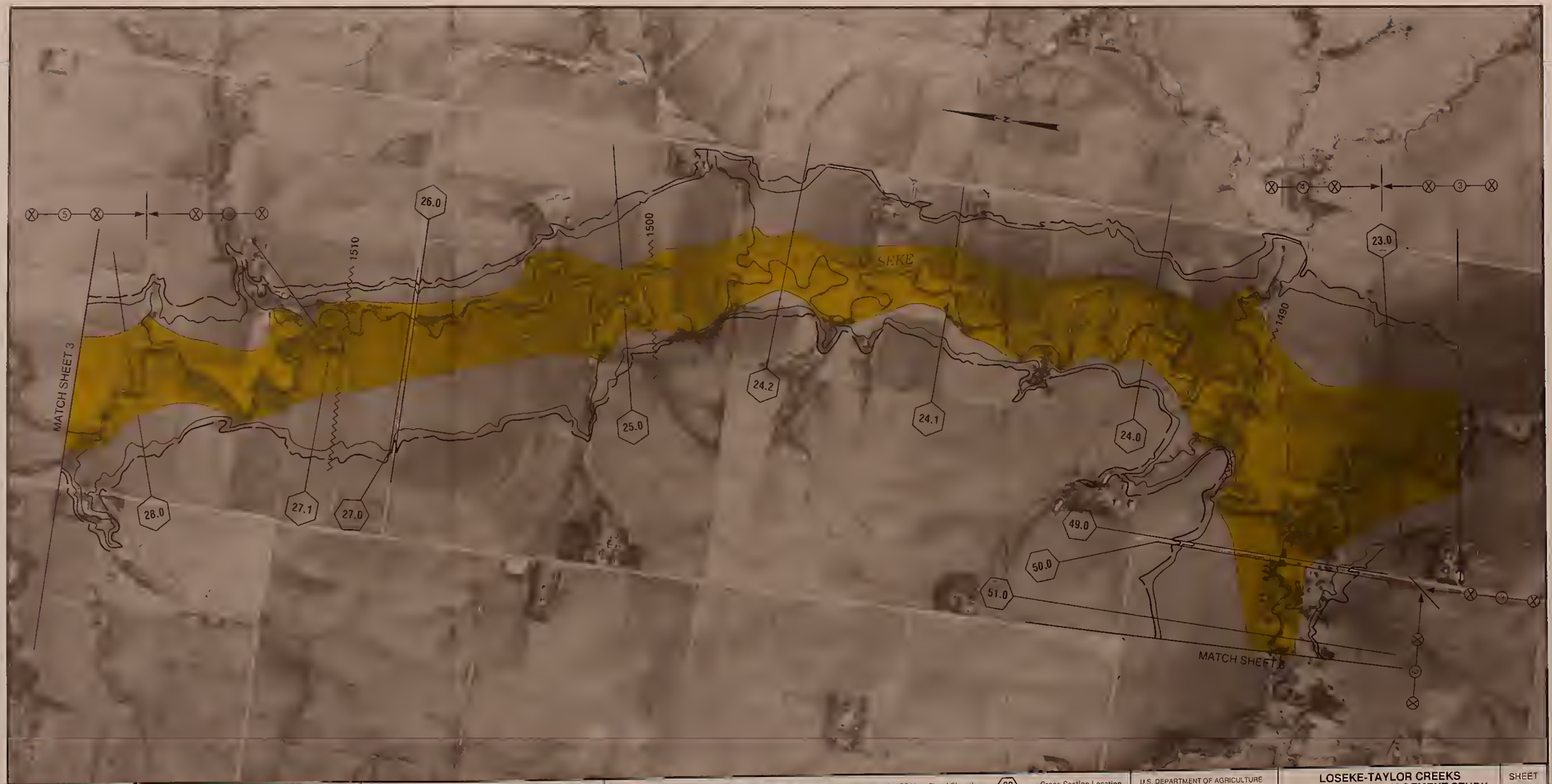

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Nebraska Natural Resources Commission
1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND
- Floodway
- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- Evaluation Reach
- 20 Cross Section Location
- Limit of Study

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Nebraska Natural Resources Commission
1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND

- Floodway
- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- Evaluation Reach
- 20 Cross Section Location
- Limit of Study

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COLFAX & PLATTE COUNTIES, NEBRASKA

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Nebraska Natural Resources Commission
1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND
- Floodway
- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- Evaluation Reach
- 20 Cross Section Location
- Limit of Study

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LOSEKE-TAYLOR CREEKS FLOOD PLAIN MANAGEMENT STUDY
COLFAX & PLATTE COUNTIES, NEBRASKA

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Nebraska Natural Resources Commission 1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND
- Floodway
- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- Evaluation Reach
- 20 Cross Section Location
- Limit of Study

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COLFAX & PLATTE COUNTIES, NEBRASKA

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OCTOBER 1993 1007601

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Nebraska Natural Resources Commission
1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND
- Floodway
- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- Evaluation Reach
- 20 Cross Section Location
- Limit of Study

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COLFAX & PLATTE COUNTIES, NEBRASKA

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OCTOBER 1993 1007601

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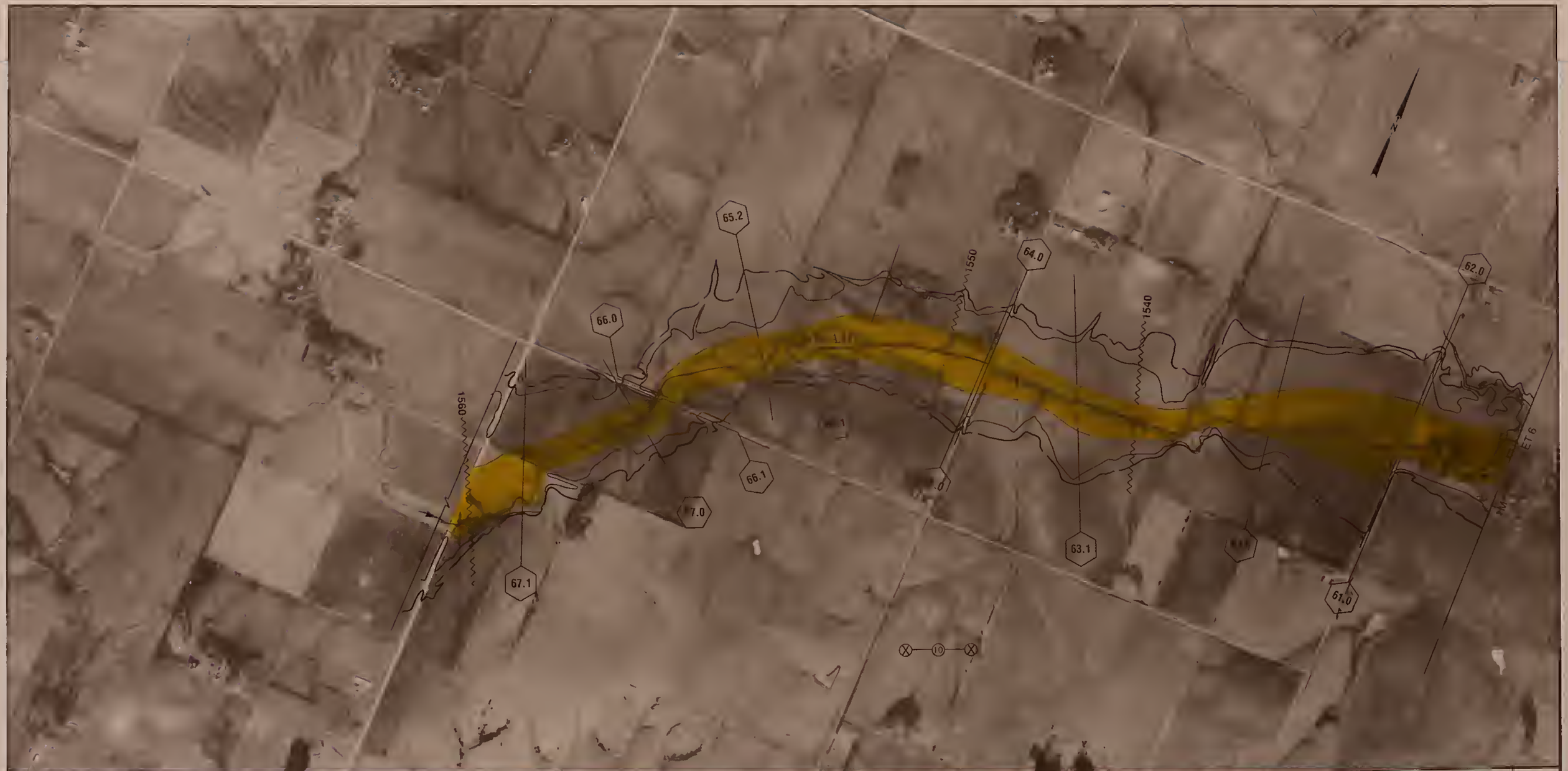

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Nebraska Natural Resources Commission 1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND
- Floodway
- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- (1) Evaluation Reach
- (20) Cross Section Location
- Limit of Study

U.S. DEPARTMENT OF AGRICULTURE
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LOSEKE-TAYLOR CREEKS FLOOD PLAIN MANAGEMENT STUDY
COLFAX & PLATTE COUNTIES, NEBRASKA

SHEET 7

OCTOBER 1993 1007601

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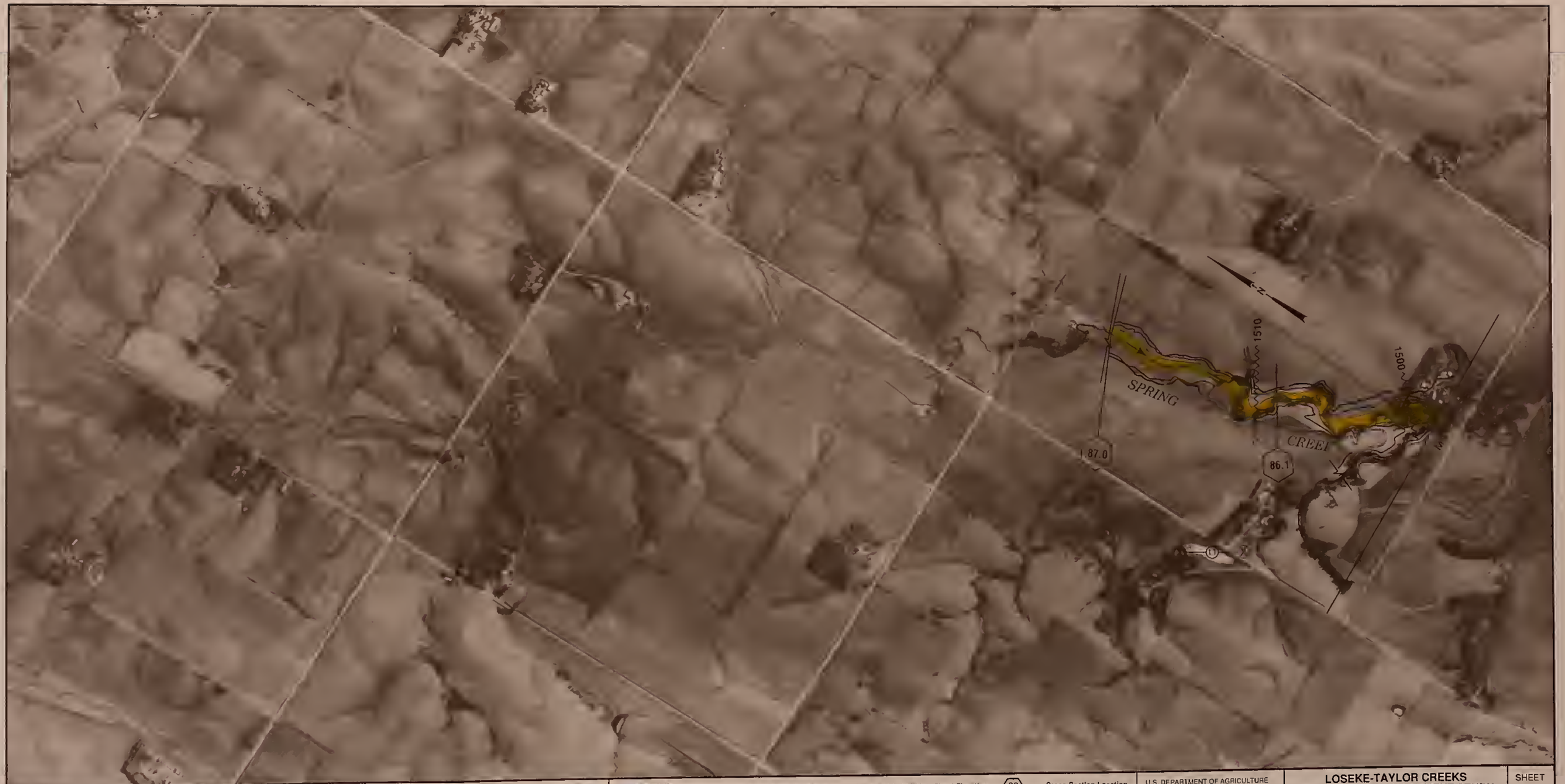

NOTE: LIMITS OF FLOODING SHOWN MAY VARY FROM ACTUAL LOCATIONS ON THE GROUND AND DUE TO INHERENT AERIAL PHOTOGRAPHIC DISPLACEMENT THE PHOTOGRAPHIC IMAGE MAY VARY FROM TRUE GROUND LOCATIONS.

Nebraska Natural Resources Commission
1988 Photography

SCALE
0 1000 2000 FEET
0 200 400 600 METERS

LEGEND

- Floodway
- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- Evaluation Reach
- 20 Cross Section Location
- Limit of Study

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LOSEKE-TAYLOR CREEKS
FLOOD PLAIN MANAGEMENT STUDY
COLFAX & PLATTE COUNTIES, NEBRASKA

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Nebraska Natural Resources Commission
1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND

- Floodway
- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- Evaluation Reach
- 20 Cross Section Location
- Limit of Study

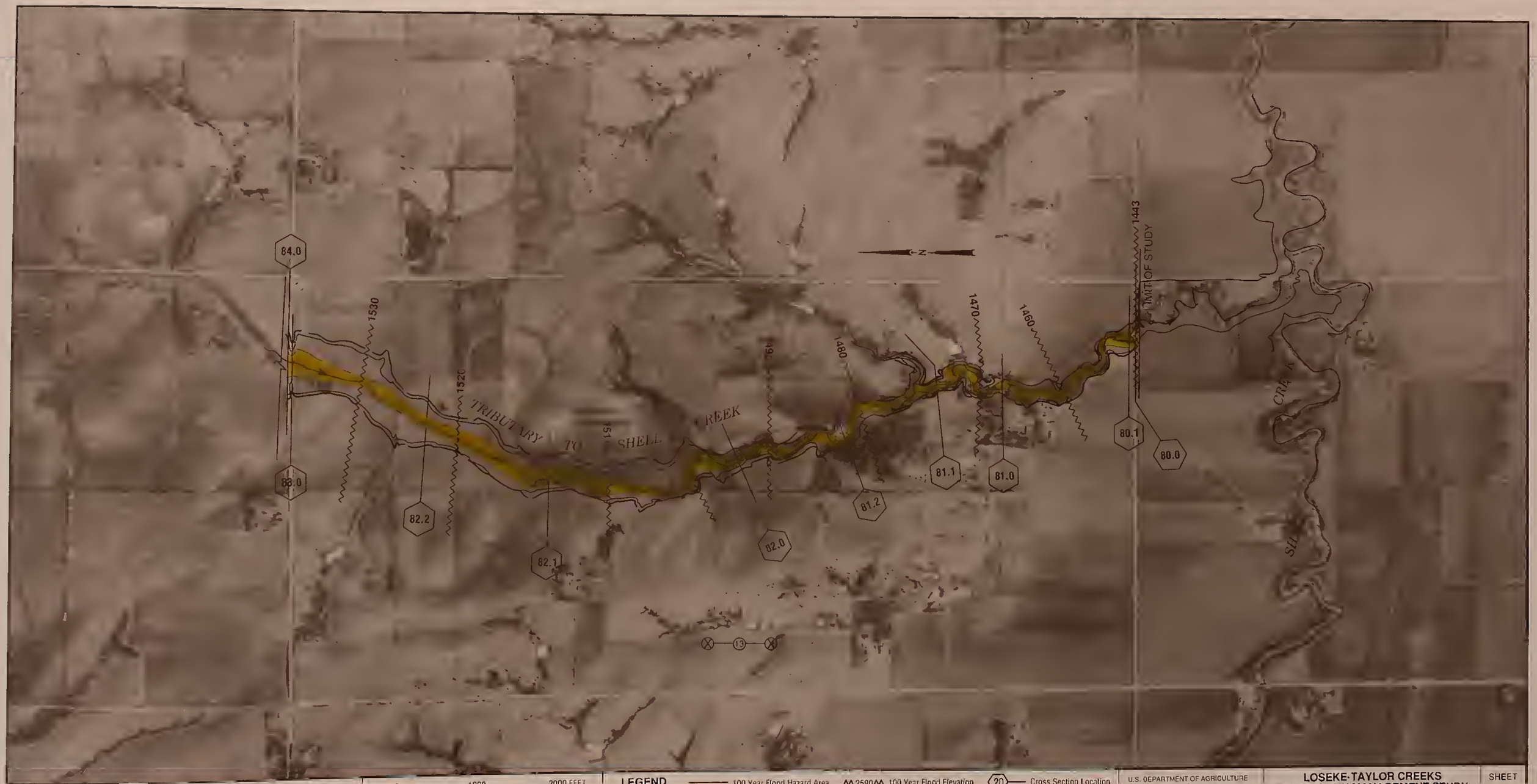
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

LOSEKE-TAYLOR CREEKS FLOOD PLAIN MANAGEMENT STUDY
COLFAX & PLATTE COUNTIES, NEBRASKA

SHEET 9

OCTOBER 1993 1007501

USGS NATIONAL CARTOGRAPHY & GIS CENTER FORT WORTH TX 1994



NOTE: LIMITS OF FLOODING SHOWN MAY VARY FROM ACTUAL LOCATIONS ON THE GROUND AND DUE TO INHERENT AERIAL PHOTOGRAPHIC DISPLACEMENT THE PHOTOGRAPHIC IMAGE MAY VARY FROM TRUE GROUND LOCATIONS

Nebraska Natural Resources Commission
1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND
- Floodway
- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- 13 Evaluation Reach
- 20 Cross Section Location
- Limit of Study

U.S. DEPARTMENT OF AGRICULTURE
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COLFAX & PLATTE COUNTIES, NEBRASKA

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NOTE: LIMITS OF FLOODING SHOWN MAY VARY FROM ACTUAL LOCATIONS ON THE GROUND AND DUE TO INHERENT AERIAL PHOTOGRAPHIC DISPLACEMENT. THE PHOTOGRAPHIC IMAGE MAY VARY FROM TRUE GROUND LOCATIONS

Nebraska Natural Resources Commission
1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND
- Floodway
- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- 1-2 Evaluation Reach
- 20 Cross Section Location
- Limit of Study

U.S. DEPARTMENT OF AGRICULTURE
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Nebraska Natural Resources Commission 1988 Photography

SCALE 0 1000 2000 FEET
0 200 400 600 METERS

LEGEND
- Floodway
- 100 Year Flood Hazard Area
- 500 Year Flood Hazard Area
- 2590 100 Year Flood Elevation
- Evaluation Reach
- 20 Cross Section Location
- Limit of Study

U.S. DEPARTMENT OF AGRICULTURE
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